GP605/605V

SERVICE MANUAL

REVISION 0

Canon

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Canon **SERVICE INFORMATION**

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SUBJECT

Service Manual in New Format

This Service Manual is prepared so that a full understanding may be attained when it is used side by side with the separately available Copier Basic Series. Refer to the appropriate section of the document when prompted as follows:

EX:Volume 3>Chapter 6>VI.A.2. "Cleaning the Charging Wire"

The Copier Basic Series is a combination of descriptions on the existing technologies used in Canon copiers. It consists of the following seven volumes, and is intended to supplement the contents of Service Manuals:

Volume I	**Introduction Fundamental Technology**
Volume II	**Applied Technology Analog Copiers**
Volume III	**Applied Technology Digital Copiers**
Volume IV	**Applied Technology Color Copiers**
Volume V	**Applied Technology Accessories**
Volume VI	**Applied Technology Controllers**
Volume VII	**Appendix Product Line and Accessories**

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INTRODUCTION

This Service Manual contains basic data and figures on the GP605/605V needed to service the machine in the field. The copier is a multifunction machine designed to provide printer functions as an option.

This Service Manual consists of the following chapters; refer to the Copier Basic Series as necessary for common technologies:

CHAPTER 1 General Description introduces the copier's features and specifications, shows how to operate the printer unit, and explains how copies are made.

CHAPTER 2 Basic Operation provides outlines of the steps used to generate copies.

CHAPTER 3 Exposure System discusses the principles of operation used for the mechanical/electrical operations of the copier's exposure system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 4 Image Processing System discusses the principles of operation used for the mechanical/electrical operations of the copier's image processing system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 5 Laser Exposure System discusses the principles of operation used for the mechanical/electrical operations of the copier's laser exposure system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 6 Image Formation System discusses the principles of how images are formed. It also explains the timing at which the various units involved in image formation are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 7 Pick-Up/Feeding System discusses the principles of how the printer unit picks up and moves paper inside it. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 8 Fixing System discusses the principles of how the printer unit fuses toner images to paper. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 9 Externals/Auxiliary Mechanisms shows the copier's external parts, and explains the principles used for the copier's various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.

CHAPTER 10 Side Paper Deck discusses the principles of operation used for the series of operations between pickup and delivery performed by the paper deck. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

CHAPTER 11 Installation introduces requirements for the site of installation, and shows how the printer unit may be installed using step-by-step instructions.

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CHAPTER 12 Maintenance and Servicing provides tables of periodically replaced parts and consumables/durables and scheduled servicing charts.

CHAPTER 13 Troubleshooting provides tables of maintenance/inspection, standards/adjustments, and problem identification (image fault/malfunction).

APPENDIX contains a general timing chart and general circuit diagrams.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

This Service Manual is prepared so that a full understanding may be attained when it is used side by side with the separately available Copier Basic Series. Refer to the appropriate section of the document when prompted as follows:

EX.

🕮 Volume 3>Chapter 6>VI.A.2. "Cleaning the Charging Wire"

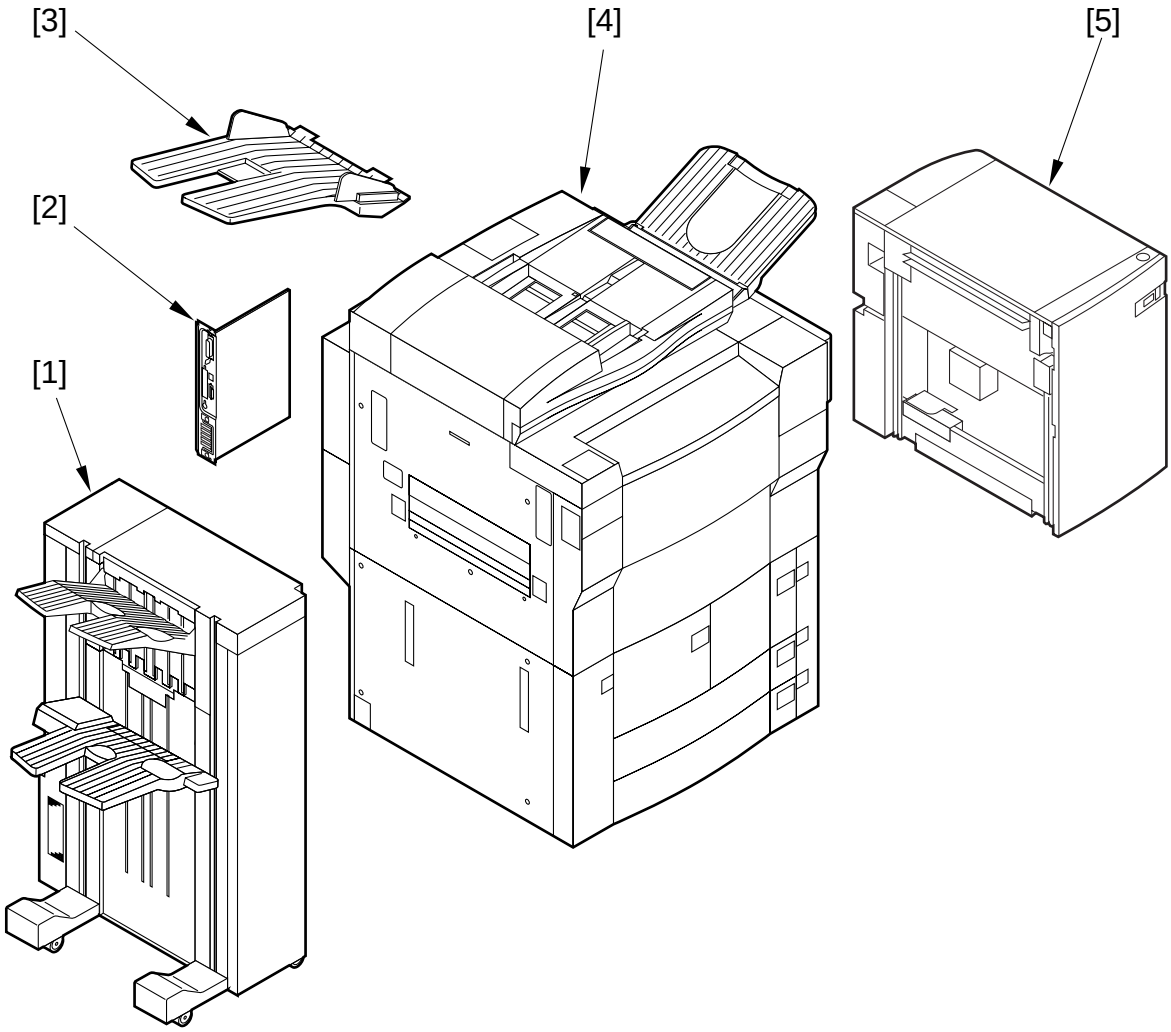
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Volume I Introduction *Fundamental Technology*
Volume II Applied Technology *Analog Copiers*
Volume III Applied Technology *Digital Copiers*
Volume IV Applied Technology *Color Copiers*
Volume V Applied Technology *Accessories*
Volume VI Applied Technology *Controllers*
Volume VII Appendix *Product Line and Accessories*

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System Configuration

The GP605/605V may be configured as follows:



[1] Finisher-D1
[2] Printer Board
[3] Copy tray
[4] GP605/605V
[5] Side Paper Deck-C1

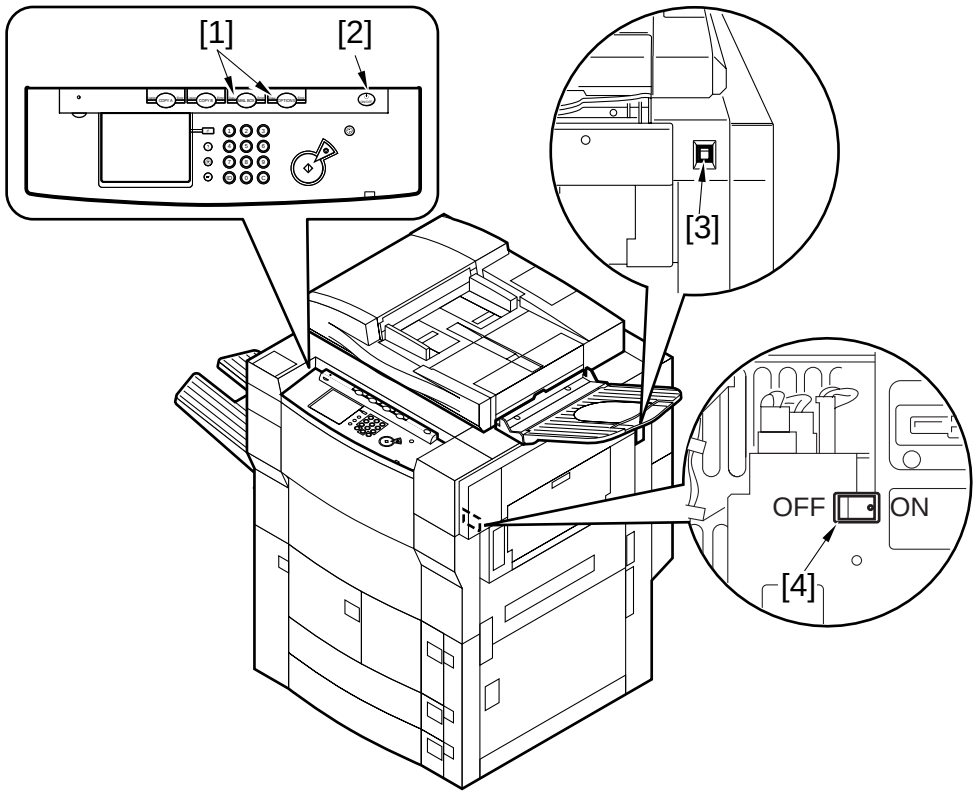
Figure 1

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When Turning Off the Main Power Switch

Be sure to turn off the main power switch, and disconnect the power plug before starting disassembly/assembly work with the following in mind:

1. When you turn off the main power switch for adding printer functions, any data being processed at the time may be lost. Check to make sure that the data lamp on the control panel is off before operating the main power switch.
   After turning off the main power switch, disconnect the communication cable from the printer board so that data will not be accepted during work.
2. Do not turn off the main power switch when downloading is taking place. Otherwise, the machine may stop operating.
3. Some units remain powered even when the control panel power switch is turned off. Be sure to turn off the main power switch, and disconnect the power plug before starting disassembly/assembly work.
   (If the heater switch is on, the cassette heater and the drum heater remain powered even when the main power switch is turned off.)
4. Not all power will be removed even when the front door is opened if both the control panel power switch and the main power switch are on.



[1] Data lamp
[2] Power switch
[3] Main power switch
[4] Heater switch

Figure 2 Arrangement of the Switches

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CHAPTER 1

GENERAL DESCRIPTION

This chapter provides specifications of the copier, instructions on how to operate the copier, and an outline of copying processes.

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I . FEATURES

1. High-Speed Operation, High Quality Image

Copying speed :	60 copies/min (1-to-n), 55 copies/min (stream reading, 1-to-1)
Reading resolution :	600 × 600 dpi
Output resolution :	1,200-equivalent × 600 dpi
Printer output resolution (w/accessory) :	2,400-equivalent × 600 dpi 1,200-equivalent × 600 dpi (for 120-V UL model)

2. Image Server as Standard

The copier comes standard with a 2-GB hard disk, enabling electronic sorting.

When making multiple copies of a single original, the original may be read no more than once to turn out as many copies as needed.

3. No-Stacking Duplexing Mechanism

The copier need not stack sheets in its duplexing unit, capable of processing double-sided copies without disrupting smooth flow.

4. Large-Capacity Paper Source

The addition of accessories enables the copier to hold as many as 7,650 sheets of copy paper:

- Paper deck (right; 1,500 sheets)
- Paper deck (left; 1,500 sheets)
- Cassette 3 (550 sheets)
- Cassette 4 (550 sheets)
- Multifeeder (50 sheets)
- Side Paper Deck-C1 (accessory; 3,500 sheets)

5. Various Delivery Processing (w/ accessory)

- Finisher* (1- or 2-point stapling)
- Saddle finisher* (middle bound booklet)

*Accessory.

6. Printer Functions

The copier may be equipped with a printer board (accessory), servicing as a printer on a network.

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II . SPECIFICATIONS

A. Copier

1. Type

Body	Console
Copyboard	Fixed
Light source	Fluorescent lamp
Lens	Lens array (F3.7)
Photosensitive medium	Amorphous silicon (108 mm dia.)

Table 1-201

2. System

		GP605/GP605V
Copying		Indirect photostatic
Charging		Corona
Exposure		Twin laser
Copy density adjustment		Auto or manual
Development		Dry (toner projection)
Pickup	Auto	Front deck (2 holders), front cassette (2 holders)
	Manual	Manual feed tray (about 5.5 mm deep; about 50 sheets of 80 g/m^2 paper)
Transfer		Corona
Separation		Corona (static separation)
Cleaning		Blade
Fixing		Heating rollers GP605 (100-V model): 760 W (main) + 400 W (sub) GP605V (100-V model): 850 W (main) + 360 W (sub) GP605 (120/230-V model): 910 W (main) + 390 W (sub)

Table 1-202

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3. Performance

		GP605 / GP605V		
Original type		Sheet, book, 3-D object (2 kg max.)		
Maximum original size		A3		
Reproduction ratio	DIRECT	1 : 1		
	REDUCE I	1 : 0.250		
	REDUCE II	1 : 0.500		
	REDUCE III	1 : 0.611		
	REDUCE IV	1 : 0.707		
	REDUCE V	1 : 0.816		
	REDUCE VI	1 : 0.865		
	ENLARGE I	1 : 1.154		
	ENLARGE II	1 : 1.224		
	ENLARGE III	1 : 1.414		
	ENALRGE IV	1 : 2.000		
	ENALRGE V	1 : 4.000		
	ZOOM	1 : 0.250 to 4.00 (in 1% increments)		
Wait time		5 min or less (at 20°C room temperature)		
First copy		6.5 sec (stream reading, right deck, Direct, A4/LTR, non-AE, face-down delivery) 5.2 sec (book mode, cassette 1, Direct, A4/LTR, non-AE, straight delivery, not including pre-heating of fluorescent lamp)		
Continuous copying		999 copies max.		
Copy size		Single-sided	AB	A3 max.; postcard min. (vertical feeding)
			Inch	279.4 × 431.8 mm (11"×17") max., STMT min. (vertical feeding)
		Double-sided	AB	A3 max., A5 min. (vertical feeding)
			Inch	279.4 × 431.8 mm (11"×17") max., STMT min. (vertical feeding)

Table 1-203-1

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	Copy paper type
Right deck Left deck	• Plain Paper (64 to 80 g/m²) A4, B5, LTR • Tracing Paper (SM-1) A4, B5 • Colored Paper (recommended by Canon) A4 • Thick Paper (90 to 200 g/m²) A4, B5, LTR
Cassette 3	• Plain Paper (64 to 80 g/m²) A3, B4, A4, B5, A5R, A4R, B5R, 279.4 × 431.8 mm (11"×17"), LGL, LTR, LTRR, STMT (vertical feeding) • Tracing Paper (SM-1) A3, B4, A4, B5, A4R, B5R • Colored Paper (recommended by Canon) B4, A4, A4R • Thick Paper (90 to 200 g/m²) A3, B4, A4, B5, AR, B5R, LTR, LTRR
Manual feed tray	• Plain Paper (64 to 80 g/m²) A3, B4, A4, B5, A5R, A4R, B5R, 279.4 × 431.8 mm (11"×17"), LGL, LTR, LTRR, STMT (vertical feeding) • Tracing Paper (SM-1, GNT-80, GSN-75) A3, B4, A4, B5, A4R, B5R • Colored Paper (recommended by Canon) B4, A4, A4R • Postcard (vertical feeding only) Japanese government postcards • Label Sheet (recommended by Canon) B4, A4, A4R, LTR, LTRR • Thick Paper (90 to 200 g/m²) A3, B4, A4, B5, A4R, B5R, LTR, LTRR

Table 1-203-2

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		Copy paper type
Single-sided mode		• Plain Paper (64 to 80 g/m^2) A3, B4, A4, B5, A5R, A4R, B5R, 279.4 × 431.8 mm (11"×17"), LGL, LTR, LTRR, STMT (vertical feeding) • Tracing Paper (SM-1, GNT-80, GSN-75) A3, B4, A4, B5, A4R, B5R • Transparency (recommended by Canon) A4, A4R, LTR, LTRR • Colored Paper (recommended by Canon) B4, A4, A4R • Postcard (vertical feeding only) Japanese government postcards • Label Sheet (recommended by Canon) B4, A4, A4R, LTR, LTRR • Thick Paper (90 to 200 g/m^2) A3, B4, A4, B5, A4R, B5R, LTR, LTRR
Face-down delivery mode		• Plain Paper (64 to 80 g/m^2) A3, B4, A4, B5, A5R, A4R, B5R, 279.4 × 431.8 mm (11"×17"), LGL, LTR, LTRR, STMT (vertical feeding) • Tracing Paper (SM-1, GNT-80, GSN-75) A3, B4, A4, B5, A4R, B5R • Colored Paper (recommended by Canon) B4, A4, A4R • Postcard (vertical feeding only) Japanese government postcards • Label Sheet (recommended by Canon) B4, A4, A4R, LTR, LTRR • Thick Paper (90 to 200 g/m^2) A3, B4, A4, B5, A4R, B5R, LTR, LTRR
Double-sided mode	Auto	• Plain Paper (64 to 80 g/m^2) A3, B4, A4, B5, A5R, A4R, B5R, 279.4 × 431.8 mm (11"×17"), LGL, LTR, LTRR, STMT (vertical feeding) • Colored Paper (recommended by Canon) B4, A4, A4R • Thick Paper (90 to 200 g/m^2) A3, B4, A4, B5, A4R, B5R, LTR, LTRR
	Manual feed tray	• Plain Paper (64 to 80 g/m^2) A3, B4, A4, B5, A5R, A4R, B5R, 279.4 × 431.8 mm (11"×17"), LGL, LTR, LTRR, STMT (vertical feeding) • Colored Paper (recommended by Canon) B4, A4, A4R • Postcard (vertical feeding only) Japanese government postcards • Thick Paper (90 to 200 g/m^2) A3, B4, A4, B5, A4R, B5R, LTR, LTRR

Table 1-203-3

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Tray	Claw	No
	Paper deck (right, left)	162 mm deep (approx.; about 1,500 sheets of 80 g/m^2)
	Cassette 3/4	55 mm deep (approx.; about 550 sheets of 80 g/m^2)
Delivery tray		250 sheets (approx.; equivalent of 80 g/m^2 paper)
Image server (hard disk size)		2GB
Non-image width	Leading edge	Direct, Enlarge/Reduce: 4.0 +1.5, -1.0 mm (4.0 + 1.8, -1.4 mm)*
	Trailing edge	Direct, Enlarge/Reduce: 2.5 ±1.5 mm (2.5 ±1.8 mm)*
	Left/right (1st side)	Direct, Enlarge/Reduce: 2.5 ±1.5 mm (2.5 ±1.8 mm)*
Auto clear		Yes (2 min standard; may be changed between 0 and 9 min in 1-min increments)
Auto power-off		No
Power save mode	Low power mode	Yes (15 min standard; may be changed in user mode to 10, 15, 20, 30, 40, 50, 90 min or 2, 3, or 4 hr.)
	Auto sleep	Yes (60 min standard; may be changed in user mode to 10, 15, 20, 30, 40, 50, 90 min or 2, 3, or 4 hr)
	Power save mode	Yes
Accessory		• Finisher-D1 • Saddle Finisher-D2 • Side Paper Deck-C1 • Cassette Heater Kit-16 (for Side Paper Deck-C1) • Remote Diagnostic Device II • Copy Data Controller-A1 • Control Card V • Copy Tray Unit-D1 • Original Base D1

*When the ADF is used.

Table 1-203-4

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4. Others

<table>
<tr><th colspan="2"></th><th>GP605 / GP605V</th></tr>
<tr><td rowspan="3">Operating conditions</td><td>Temperature</td><td>15° to 30°C</td></tr>
<tr><td>Humidity</td><td>5% to 80%</td></tr>
<tr><td>Atmospheric Pressure</td><td>810.6 to 1013.3 hpa (0.8 to 1.0 atm)</td></tr>
<tr><td>Power supply</td><td>Serial No.</td><td>100V : LLPxxxxx
100V (GP605V) : LEExxxxx
120V (UL) : NLExxxxx
120V : NLZxxxxx
230V (AMS) : ULExxxxx
230V (FRN) : SLExxxxx
230V (UK) : QLExxxxx
230V (DL) : TLExxxxx
230V (ITA) : PLExxxxx
230V (CA) : RLExxxxx
230V : PLPxxxxx</td></tr>
<tr><td>Power consumption</td><td colspan="2">
<table>
<tr><th></th><th></th><th>100V/20A</th><th>100V/15A</th><th>120V</th><th>230V</th></tr>
<tr><td>Maximum (kW)</td><td></td><td>2.0</td><td>1.5</td><td>2.0</td><td>2.0</td></tr>
<tr><td>Continuous* (Wh) : (Reference)</td><td></td><td>498</td><td>497</td><td>474</td><td>467</td></tr>
<tr><td>Standby (Wh) : (Reference)</td><td></td><td>357</td><td>355</td><td>335</td><td>330</td></tr>
<tr><td>SLEEP (Wh) : (Reference)</td><td></td><td>12</td><td>12</td><td>12</td><td>16</td></tr>
<tr><td>LOW-POWER MODE (Wh) : (Reference)</td><td></td><td>158</td><td>155</td><td>141</td><td>135</td></tr>
<tr><td rowspan="3">ENERGY SAVER MODE (Wh) : (Reference)</td><td>-10%</td><td>346</td><td>315</td><td>313</td><td>298</td></tr>
<tr><td>-25%</td><td>311</td><td>269</td><td>270</td><td>255</td></tr>
<tr><td>-50%</td><td>269</td><td>224</td><td>216</td><td>200</td></tr>
</table>
*The operationg conditions are as follows:
As many as 10 originals are placed, the copy count is set to '20', and this sequence is repeated three times with the intervals of jobs being 20 min.
</td></tr>
<tr><td>Noise (Sound power level :impulse mode)</td><td>Copying
Stanby</td><td>78 dB or less
55 dB or less</td></tr>
<tr><td colspan="2">Ozone (8 hr average)</td><td>0.05 ppm or less</td></tr>
<tr><td>Dimensions</td><td>Width
Depth
Height</td><td>764 mm
795 mm
1137 mm</td></tr>
<tr><td colspan="2">Weight</td><td>251Kg</td></tr>
<tr><td>Consumables</td><td>Copy paper
Toner</td><td>Keep copy paper wrapped to protect against humidity. Avoid direct sunshine, and keep at 40°C/85% or less.</td></tr>
</table>

Table 1-204-1

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Reproduction mode		Size	Copy paper size	copies/min*
Direct		A3(297×420mm)	A3	26(30)
		A4(210×297mm)	A4	55(60)
		B4(257×364mm)	B4	32(35)
		B5(182×257mm)	B5	58(60)
		A4R(297×210mm)	A4R	33(43)
		B5R(257×182mm)	B5R	33(50)
Reduce	III (61.1%)	A3→A5R	B5R	34
	IV (70.7%)	B4→A5R	B5R	38
		A3→A4R	A4R	32
	V (81.6%)	B4→A4R	A4R	36
	VI (86.5%)	A4→B5	B5	57
		A3→B4	B4	28
Enlarge	II (200.0%)	A5R→A3	A3	–*
	III (141.4%)	A4R→A3	A3	23
		B5R→B4	B4	23
	IV (122.4%)	A4R→B4	B4	27
	V (115.4%)	B4→A3	A3	28
		B5→A4	A4	50

Note: A5R originals cannot be set in the ADF.
*1-to-n values are in parentheses.

Table 1-204-2 Copying Speed (copier alone)

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Reproduction mode		Size	Copy Size	copies/min*
Direct		279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	23(30)
		LTR	LTR	55(60)
		LGL	LGL	36(36)
		LTRR	LTRR	33(46)
		STMTR	STMT	–*(60)
Reduce	III (64.7%)	279.4×431.8mm (11"×17")→LTRR	LTRR	30
	IV (73.3%)	279.4×431.8mm (11"×17")→LGL	LGL	28
	V (78.6%)	LGL→LTRR	LTRR	38
Enlarge	II (200.0%)	STMTR→ 279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	–*
	III (129.4%)	LTRR→ 279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	25
	IV (121.4%)	LGL→ 279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	27

Note: A5R originals cannot be set in the ADF.
*1-to-n values are in parentheses.

Table 1-204-3 Copying Speed (copier alone)

The specifications are subject to change for product improvement.

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B. Side Paper Deck-C1

Item	Descriptions
Pickup	No claw (retard) type
Paper storage	Side tray
Copy paper type	• Plain Paper (64 to 80 g/m^2) A4, B5, LTR • Tracing Paper (SM-1) A4, B5 • Colored Paper (recommended by Canon) A4 • Thick Paper (90 to 200 g/m^2) A4, B5, LTR
Paper storage capacity	385 mm high (stack; approx.; about 3,500 sheets of 80 g/m^2)
Serial No.	A4 type: ZQYxxxxx/LTR type: ZQZxxxxx
Paper size alternation	By relocating the size guide plate (in steps), by setting in service mode (OPTION)
Dimensions	329 (W) × 583 (D) × 680 (H) mm
Weight	33.5 kg (approx.)
Power supply	DC power from the copier.
Operating Conditions Temperature Humidity Atmospheric pressure	Same as the copier.

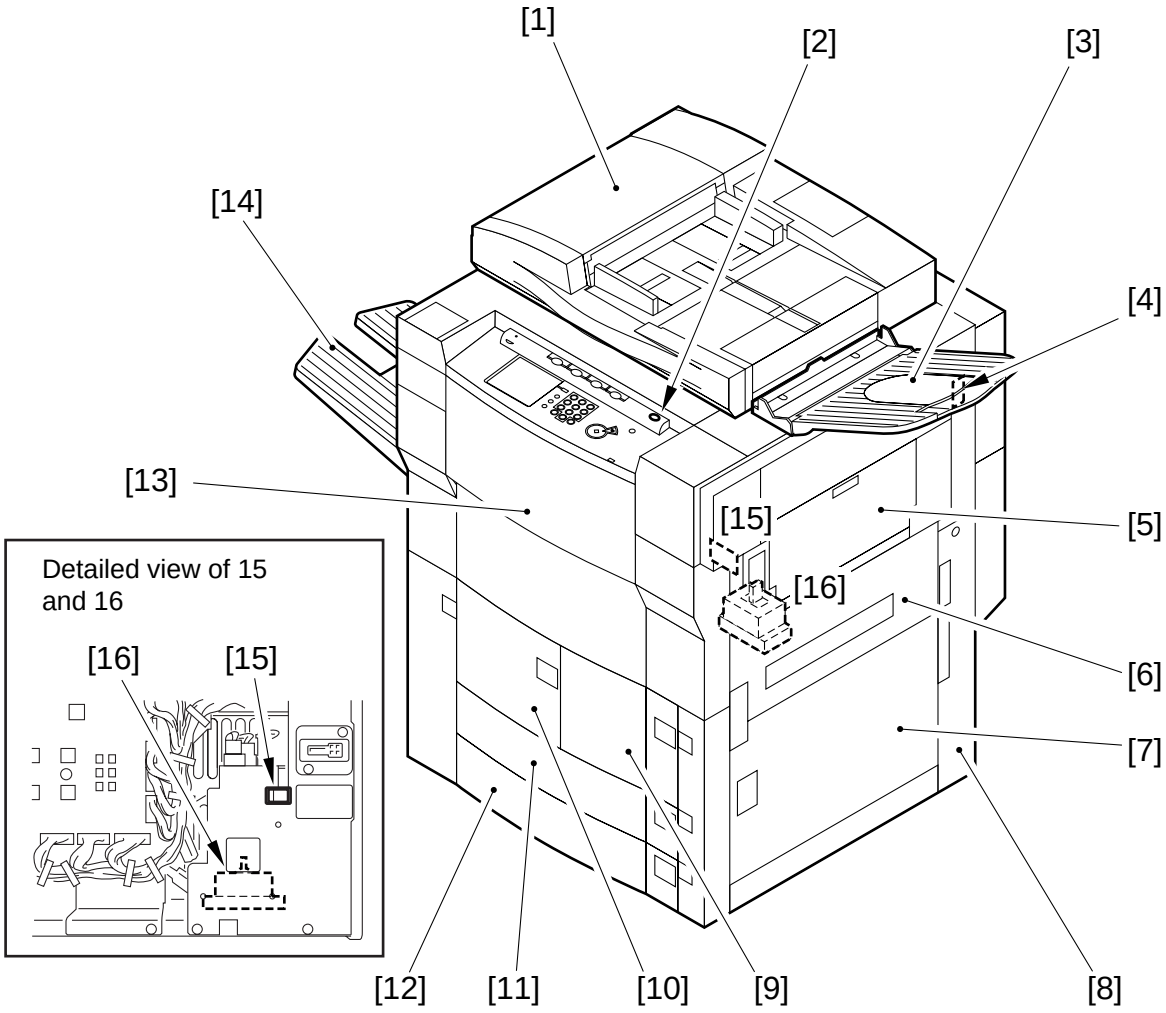
Table 1-205

The specifications are subject to change for product improvement.

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III . NAMES OF PARTS

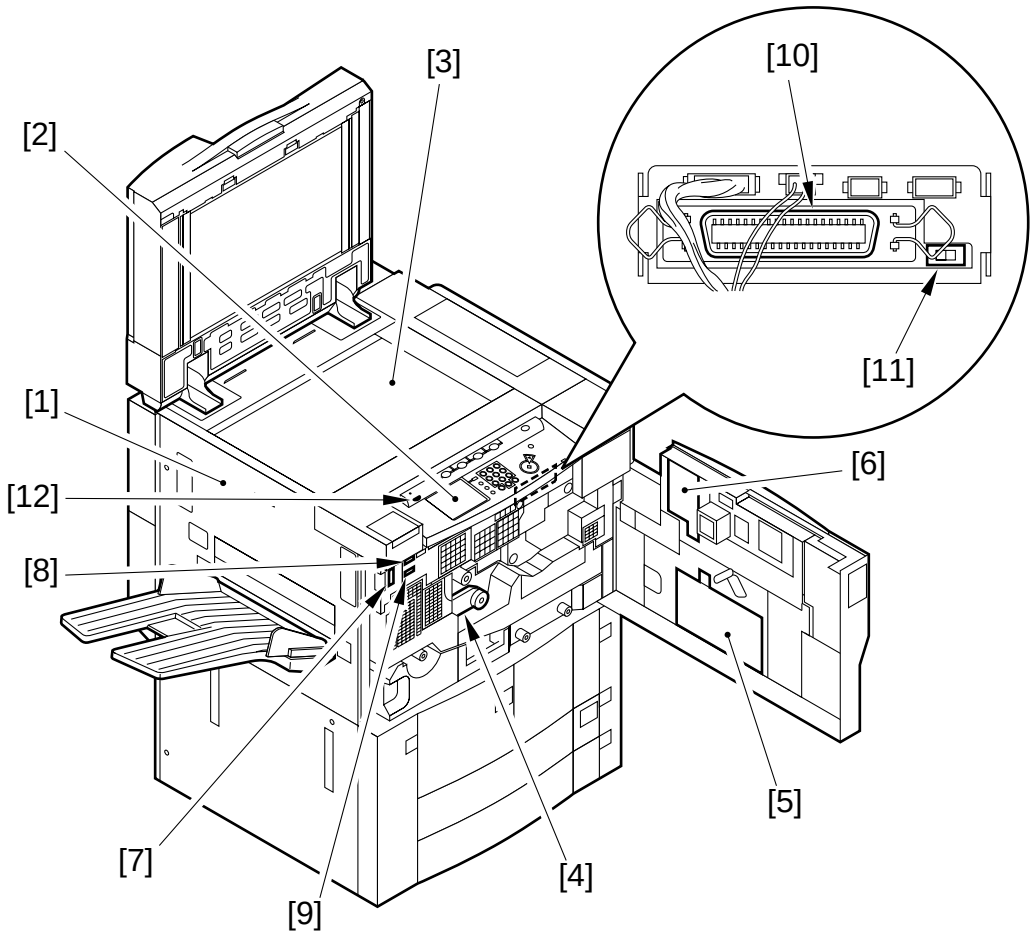
A. External View



[1] ADF
[2] Control panel power switch
[3] Original delivery tray
[4] Main power switch
[5] Manual feed tray
[6] Upper right cover
[7] Lower right cover
[8] Waste toner case/drum protective sheet holder
[9] Right deck
[10] Left deck
[11] Cassette 3
[12] Cassette 4
[13] Front cover
[14] Delivery tray
[15] Heater switch (cassette)
[16] Leakage breaker

Figure 1-301 External View 1

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[1] Delivery cover
[2] Control panel
[3] Copyboard glass
[4] Feeding assembly releasing lever
[5] Service book holder
[6] Grip, drum stop tool holder
[7] Cover switch (door switch) assembly
[8] Total copy counter
[9] Printer counter
[10] Connector for downloading (bi-Centronics)
[11] Switch for downloading
right: LOAD (for downloading)
left: COPY (for normal copying)
[12] LCD contrast adjuster

Figure 1-302 External View 2

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Blank Page

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B. Cross Section

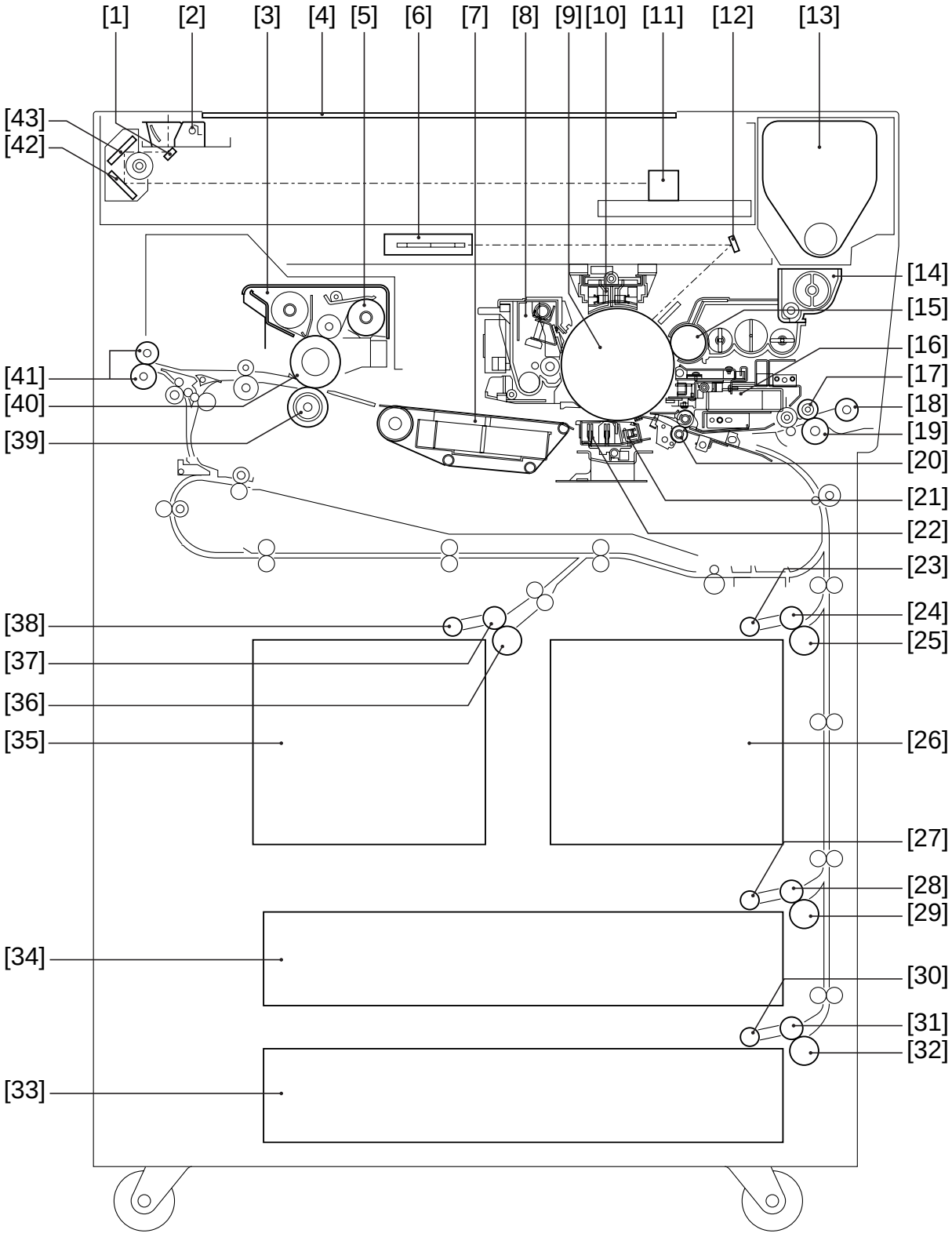


Figure 1-303 Cross Section

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[1] No. 1 mirror
[2] Scanning lamp
[3] Fixing assembly
[4] Copyboard glass
[5] Fixing cleaning belt
[6] Laser unit
[7] Feeding assembly
[8] Drum cleaning unit
[9] Photosensitive drum
[10] Primary charging assembly
[11] CCD unit
[12] Bending mirror
[13] Set-up cartridge
[14] Hopper
[15] Developing cylinder
[16] Pre-transfer charging assembly
[17] Manual feed tray feeding roller
[18] Manual feed tray pickup roller
[19] Manual tray separation roller
[20] Registration roller
[21] Transfer charging assembly
[22] Separation charging assembly
[23] Right deck pickup roller
[24] Right deck feeding roller
[25] Right deck separation roller
[26] Right deck
[27] Cassette 3 pickup roller
[28] Cassette 3 feeding roller
[29] Cassette 3 separation roller
[30] Cassette 4 pickup roller
[31] Cassette 4 feeding roller
[32] Cassette 4 separation roller
[33] Cassette 4
[34] Cassette 3
[35] Left deck
[36] Left deck separation roller
[37] Left deck feeding roller
[38] Left deck pickup roller
[39] Lower fixing roller
[40] Upper fixing roller
[41] External delivery roller
[42] No. 3 mirror
[43] No. 2 mirror

Table 1-301

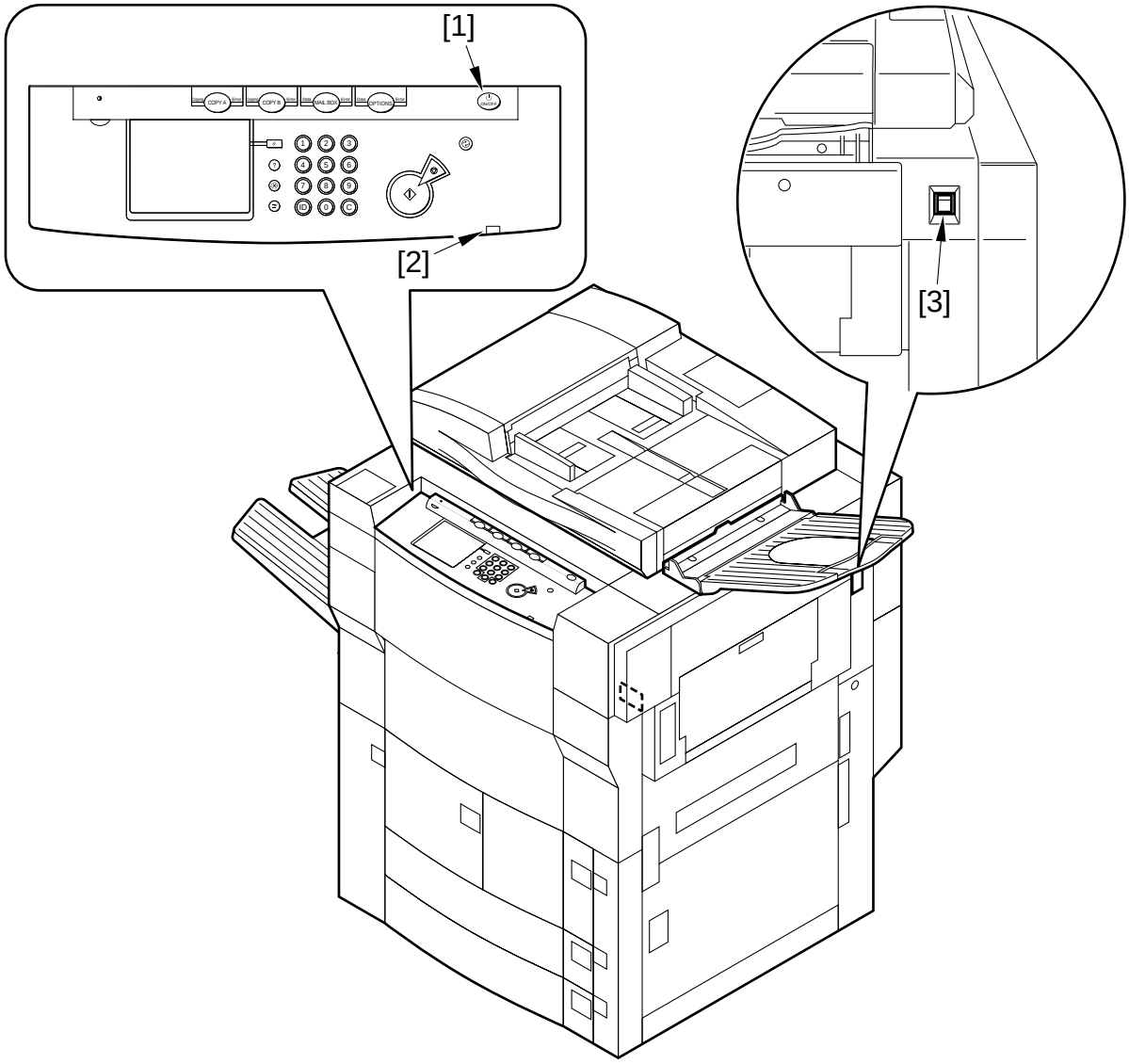
COPYRIGHT © 1999 CANON INC.

IV . OPERATING THE COPIER

A. Turning on the Power Switch

The copier is equipped with two switches: "main power switch" and "control panel power switch."

When turning on the copier, be sure to turn on the main power switch and then the control panel power switch in the order indicated.



[1] Control panel power switch

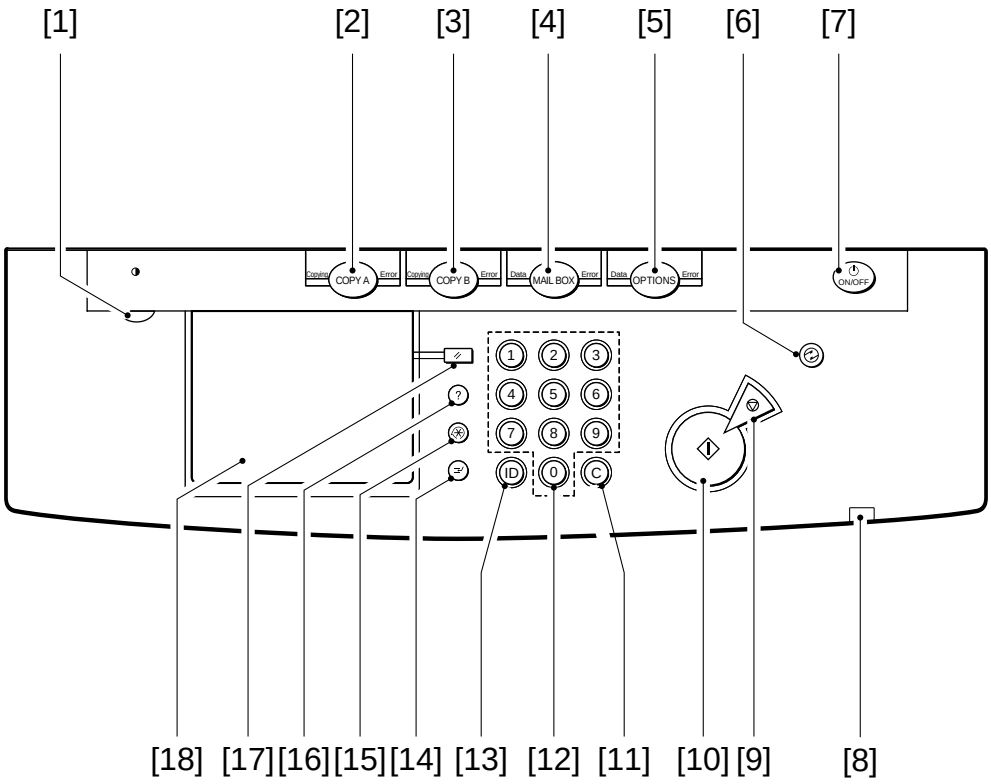
[2] Main power lamp

[3] Main power switch

Figure 1-401 Arrangement of the Switches

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B. Control Panel



[1] Screen contrast dial
[2] Copy key A
[3] Copy key B
[4] Mail Box key
[5] Extension key
[6] Save Power key
[7] Control panel power switch
[8] Main power lamp*
[9] Stop key
[10] Start key
[11] Clear key
[12] Numeric keypad
[13] ID key
[14] Interrupt key
[15] User Mode key
[16] Guide key
[17] Reset key
[18] Touch panel

Figure 1-402

*Turns on when the main power switch is turned on.

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C. Extension Mode

Mode	Separate Page
TWO-PAGE SEPARATION	Use it to copy, for example, the left and right pages of an open book on separate sheets of paper by a single operation.
TRANSP. INTERLVING	Use it to insert a single sheet between transparencies when copying on transparencies.
SHIFT	Use it to shift the entire image on the original to the center or a corner of its copy.
COVER/SHT INSERTION	Use it to copy on different types of paper for covers, back covers, and chapter covers.
DIF. SIZE ORIGINAL	Use it to make copies of originals of different sizes (but of the same feeding width).
MARGIN	Use it to create a margin for binding along the edge of copies.
FRAME ERASE	Use it to erase shadow-like images (on copies) of frames or holes in the originals.
IMAGE COMB.	Use it to copy 2, 4, or 8 originals on a single sheet of paper through automatic reduction.
IMAGE SEPARATION	Use it to copy a single image on a sheet of paper of a specific size through automatic enlargement (by dividing into two or four).
NEGA/POSI	Use it to make copies by reversing the black and white images of an original.
SHARPNESS	Use it to make sharp copies of an original.
FORM COMPOSITION	Use it to make copies by combining "form images" stored in advance with the image of an original.
MODE MEMORY	Use it to store or call back copying modes.
RECALL	Use it to call back up to three copying modes stored in advance.
BOOKLET	Use it to make copies of a single- or double-sided original so that a booklet may be made.

Table 1-401 Functions

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D. User Mode

CUSTOM COMMON SETTINGS	AE ADJUSTMENT	Use it to select an auto density adjustment method. (priority on speed*/priority on image quality)
	AUDIBLE TONES	Use it to enable/disable the buzzer. (input sound, alarm sound, job end sound; ON*/OFF)
	DRAWER ELIGIBILITY FOR APS/ADS	Use it to set a drawer for auto drawer switching. (stack by pass: ON/OFF* ; drawers: ON*/OFF)
	PAPER ICON SETTING	Use it to select an icon for paper in the cassettes. (no factory setting)
	PRINTING PRIORITY	Use it to set priority on printing. (copier*/printer)
	ENERGY SAVER MODE	Use it to change the level of same power mode. (-10%*, -25%, -50%, no recovery time)
	INCH ENTRY	Use it to enable/disable inch input. (ON/OFF*)
	SET SYSTEM SETTING PASSWORD	Use it to set an ID No. for system control. (4 digits)
	DEPT. ID MANAGEMENT	Use it to enable/disable ID control by group for ID No. or count control. (enable/disable*)
	INITIALIZE CUSTOM COMMON SETTINGS	Use it to return the common settings to factory settings. (Yes/No)
CUSTOM COPY SETTINGS	STANDARD KEY 1,2 SETTING	Use it to select preference keys for the Basic screen from the mode keys on the Extension Mode screen or the memory keys for the mode memory.
	AUTO ORIENTATION	Use it to enable/disable automatic rotation of images on selected paper based on the results of combination on original size and reproduction ratio.
	AUTO COLLATE	Use it to enable/disable switching the sorter to sort mode in response to placement of an original in the feeder. (ON*/OFF)
	PHOTO MODE	Use it to enable/disable the use of film photo mode. (ON/OFF*)
	SADF AUTO FEED	Use it to enable/disable auto copy start in response to placement of an original in the feeder manual feed assembly. (ON*/OFF)
	FIT IMAGE MODE ADJUSTMENT	Use it to change the ratio of reduction for fit-to-page mode. (93%; between 90% and 99%)
	JOB DURATION DISPLAY	Use it to enable/disable copy wait time display. (ON/OFF*)
	AUTO ORIGINAL ORIENTATION RECOGNITION	Use it to change the settings for auto detection of original orientation. (initial setting: ON*/OFF; original type replacement: ON/OFF*; identified text: Japanese*/Western & Russian)
	STANDARD SETTINGS	Use it to change copying modes stored as standard modes. (Yes/No; at time of shipment, copy count at 1, auto paper selection at ON, density/image adjustment at Auto)
	INITLALIZE CUSTOM COMMON SETTINGS	Use it to return each copy settings item to factory settings.

*Factory setting.

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TIMER SETTINGS	DATE & TIME SETTING	Use it to set the current date and time.
	AUTO SLEEP TIME	Use it to set the length of time taken to start sleep mode after operation/turning off the control panel switch. (10, 15, 20, 30, 40, 50, 60*, 90 min or 2, 3, 4 hr)
	AUTO CLEAR TIME	Use it to set the length of time taken to bring back the Basic screen on the touch panel after operation. (0 min; 1* to 9 min)
	LOW-POWER MODE TIME	Use it to set the length of time taken to start low power consumption mode after operation. (10, 5*, 20, 30, 40, 50, 60, 90 min; 2 to 40 hr)
	TIME UNTIL UNIT QUIETS DOWN	Use it to set the length of time taken to start silent mode after operation. (0 min; 1* to 9 min)
	DAILY TIMER SETTINGS	Use it to set the day of the week on which the control panel power switch is turned off. (Sun. to Sat.; 00:00 to 23:59; in 1-min increments)
ADJUSTMENT/ CLEANING	ZOOM FINE ADJUSTMENT	Use it to fine-adjust if a discrepancy occurs in size between original and copy images for vertical and horizontal ratios.
	FEEDER CLEANING	Use it to remove dirt from the pickup roller assembly by moving copy paper through the ADF.
	WIRE CLEANING	Use it to clean the wire of the charging assembly.
	DOUBLE STAPLE SPACE ADJUSTMENT	Use it to adjust the interval of staples (2-point stapling) when the ADF (accessory) is used. (40 to 150mm; 120mm*)
IMAGE SERVER CUSTOM SETTINGS	MAIL BOX REGISTRATION	Use it to set/sort the mailbox settings.
	HD MEMORY ASSIGNMENT	Use it to set the size of the image server. (300 to 1700 MB; 500MB*)

*Factory settings.

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V . ROUTINE MAINTENANCE BY THE USER

Instruct the user to clean the following at least once a week:

No.	Parts	Description
1	Copyboard glass	Wipe it with a moist cloth; then, dry wipe it.
2	ADF feeding belt	Wipe it with a cloth moistened with mild detergent solution; then, dry wipe it.

Table 1-501 Parts

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VI . SAFETY

A. Safety of Laser Light

Laser light can be harmful to the human body. The copier's laser assembly is completely housed within a protective case and by means of external covers, preventing leakage of laser light to the outside as long as the copier is used normally.

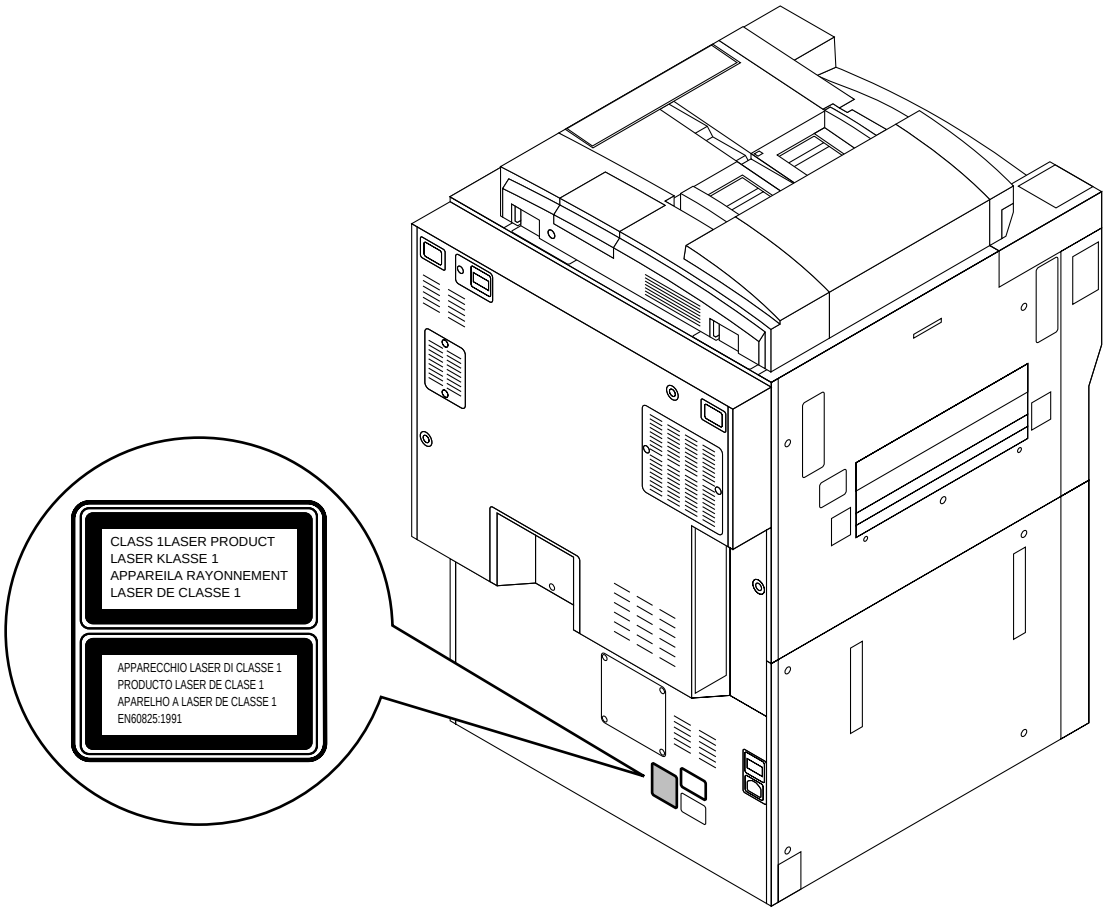


Figure 1-601 Laser Class Label

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B. CDRH Regulations

On August 2, 1976, the Center for Devices and Radiological Health (CDRH) of the US Food and Drum Administration put into force a set of regulations governing laser products.

The regulations apply to laser products produced on and after August 1, 1976, and the sale of laser products within the US is prohibited unless they show compliance with the regulations.

Figure 1-602 shows the label certifying compliance with the CDRH regulations, and all laser products to be sold in the US must bear a copy of the label.

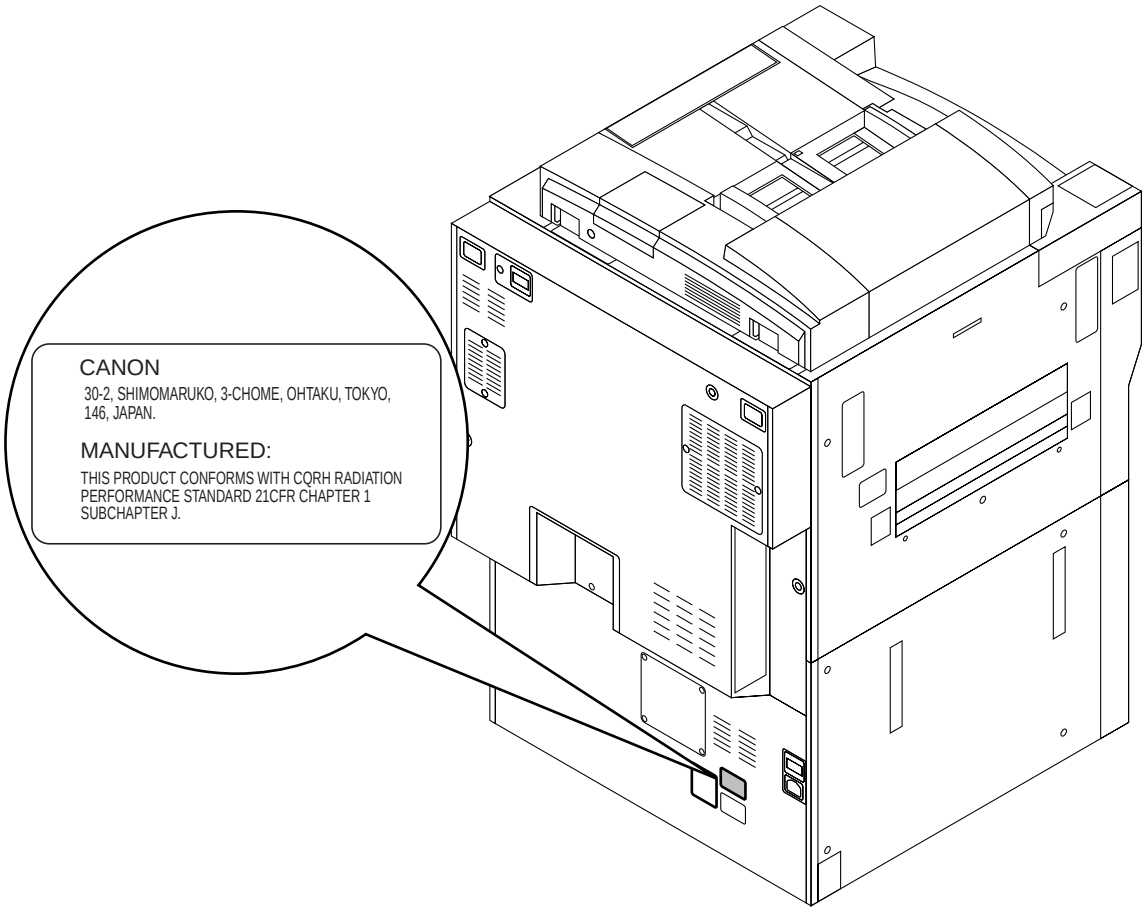

CANON
30-2, SHIMOMARUKO, 3-CHOME, OHTAKU, TOKYO, 146, JAPAN.
MANUFACTURED:
THIS PRODUCT CONFORMS WITH CQRH RADIATION PERFORMANCE STANDARD 21CFR CHAPTER 1 SUBCHAPTER J.

Figure 1-602 CDRH Compliance Label

Note:
The text may differ from model to model.

C. Handling the Laser Assembly

Be sure to take extra care whenever servicing areas around the copier's laser assembly, as by avoiding the insertion of any tool having a high reflectance.

Be sure also to remove any watches and rings. They can reflect the laser beam to damage your eyes during work.

The copier's laser beam is a red light. Any covers that may reflect the laser beam bear a copy of the label shown in Figure 1-603. Exercise particular caution whenever servicing behind such covers.

You will find the label on the copier's laser scanner covers from which laser light can escape.

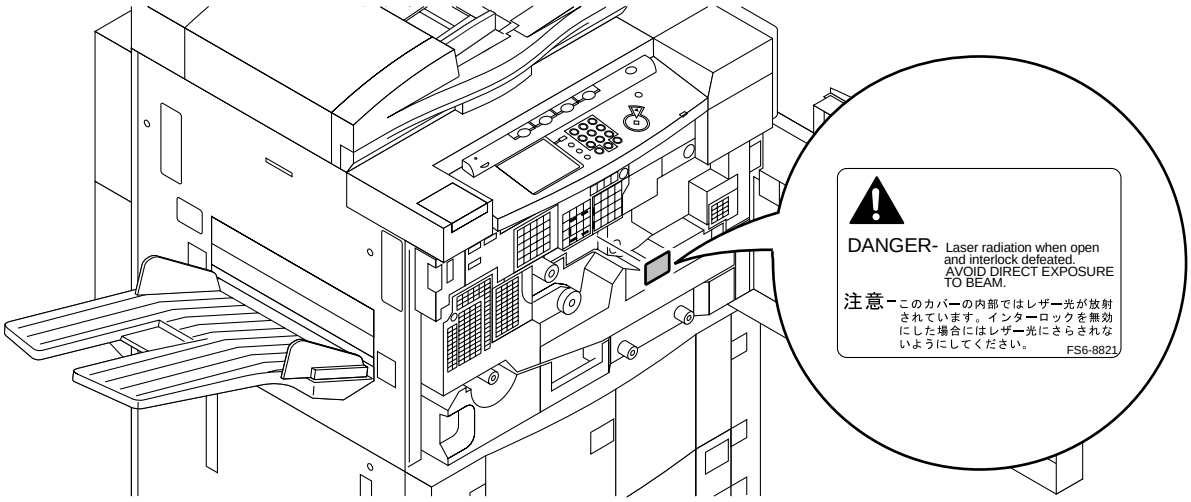

DANGER- Laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.
注意－このカバーの内部ではレザー光が放射されています。インターロックを無効にした場合にはレザー光にさらされないようにしてください。
FS6-8821

Figure 1-603-1 Label on the 100/120-V Model

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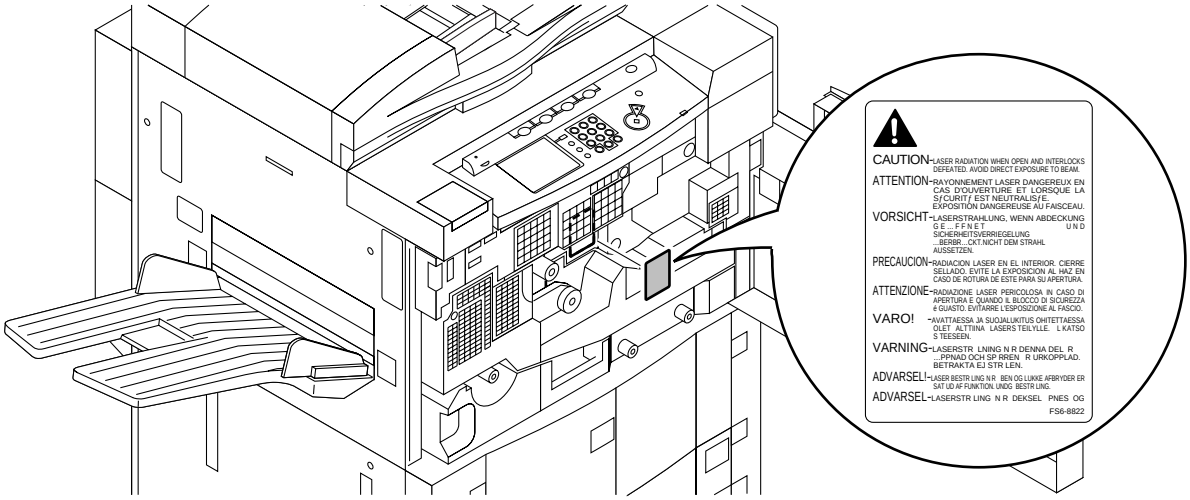

CAUTION-LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
ATTENTION-RAYONNEMENT LASER DANGEREUX EN CAS D'OUVERTURE ET LORSQUE LA S CURIT EST NEUTRALIS E. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT-LASERSTRAHLUNG, WENN ABDECKUNG G E FFNET UND SICHERHEITSVERRIEGELUNG BERBR CKT.NICHT DEM STRAHL AUSSETZEN.
PRECAUCION-RADIACION LASER EN EL INTERIOR. CIERRE SELLADO. EVITE LA EXPOSICION AL HAZ EN CASO DE ROTURA DE ESTE PARA SU APERTURA.
ATTENZIONE-RADIAZIONE LASER PERICOLOSA IN CASO DI APERTURA E QUANDO IL BLOCCO DI SICUREZZA GUASTO. EVITARE L'ESPOSIZIONE AL FASCIO.
VARO! -AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERS TEILYLLE. L KATSO S TEESEEN.
VARNING-LASERSTR LNING N R DENNA DEL R PPNAD OCH SP RREN R URKOPPLAD. BETRAKTA EJ STR LEN.
ADVARSEL!-LASER BESTR LING N R BEN OG LUKKE AFBRYDER ER SAT UD AF FUNKTION. UNDG BESTR LING.
ADVARSEL-LASERSTR LING N R DEKSEL PNES OG
FS6-8822

Figure 1-603-2 Label on the 230-V Model

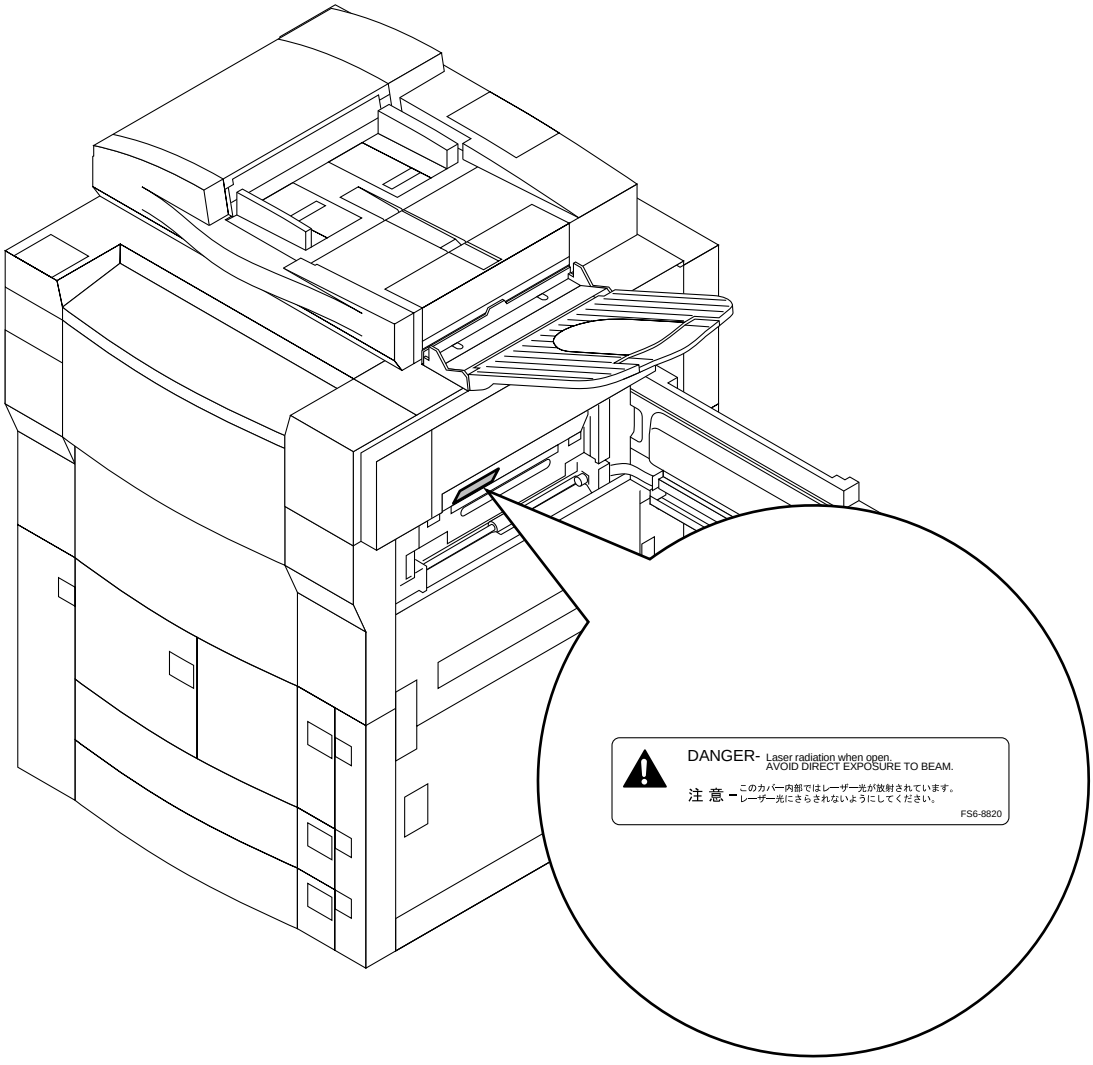


Figure 1-603-3 Label on the 100/120-V Model

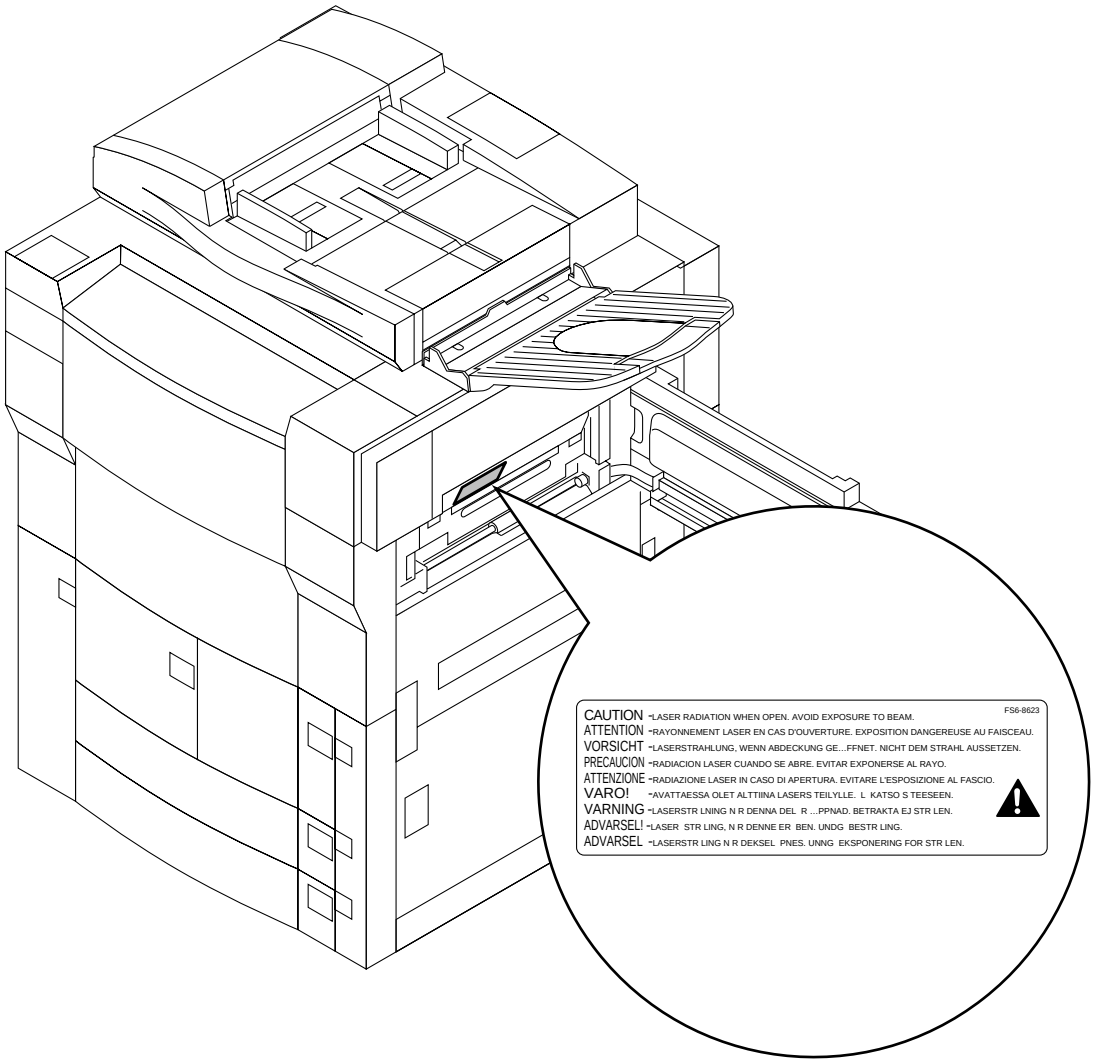

FS6-8623
CAUTION -LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ATTENTION -RAYONNEMENT LASER EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT -LASERSTRAHLUNG, WENN ABDECKUNG GE...FFNET. NICHT DEM STRAHL AUSSETZEN.
PRECAUCION -RADIACION LASER CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.
ATTENZIONE -RADIAZIONE LASER IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.
VARO! -AVATTAESSA OLET ALTTIINA LASERS TEILYLLE. L KATSO S TEESEEN.
VARNING -LASERSTR LNING N R DENNA DEL R ...PPNAD. BETRAKTA EJ STR LEN.
ADVARSEL! -LASER STR LING, N R DENNE ER BEN. UNDG BESTR LING.
ADVARSEL -LASERSTR LING N R DEKSEL PNES. UNNG EKSPONERING FOR STR LEN.

Figure 1-603-4 Label on the 230-V Model

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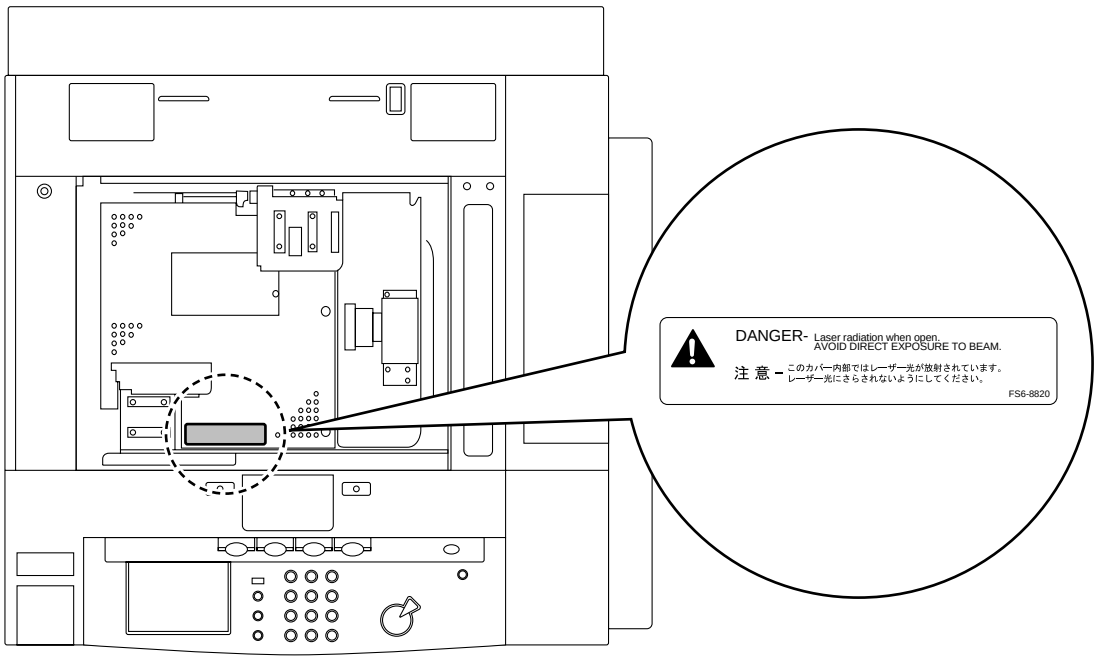


Figure 1-603-5 Label on the 100/120-V Model

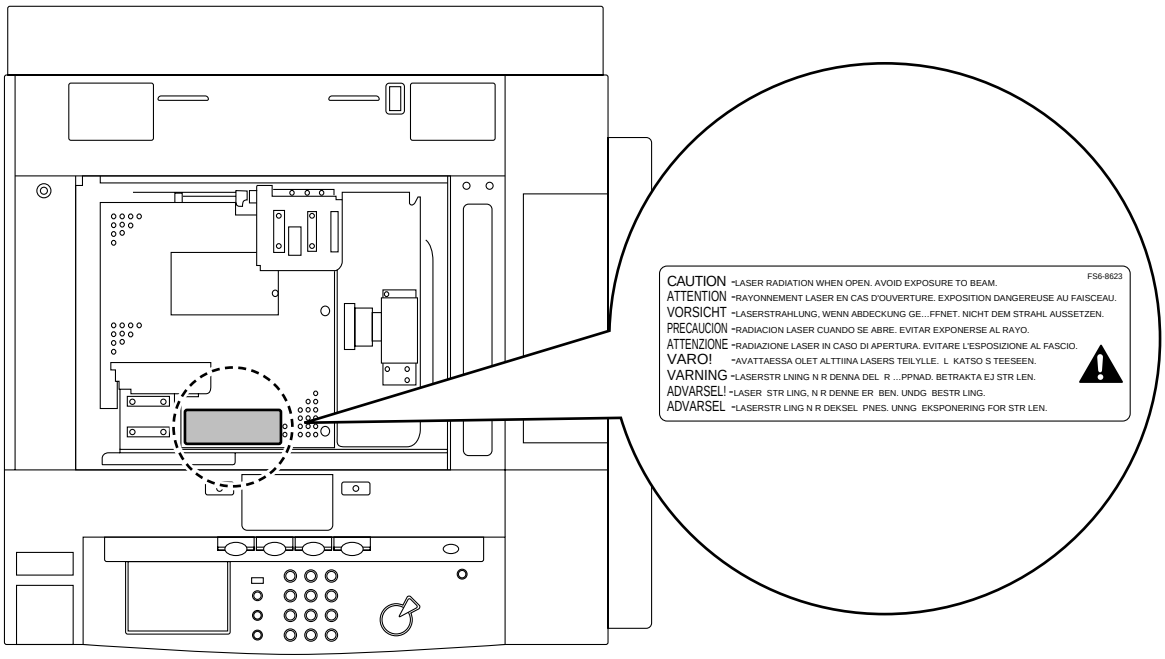

FS6-8623
CAUTION -LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ATTENTION -RAYONNEMENT LASER EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT -LASERSTRAHLUNG, WENN ABDECKUNG GE...FFNET. NICHT DEM STRAHL AUSSETZEN.
PRECAUCION -RADIACION LASER CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.
ATTENZIONE -RADIAZIONE LASER IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.
VARO! -AVATTAESSA OLET ALTTIINA LASERS TEILYLLE. L KATSO S TEESEEN.
VARNING -LASERSTR LNING N R DENNA DEL R ...PPNAD. BETRAKTA EJ STR LEN.
ADVARSEL! -LASER STR LING, N R DENNE ER BEN. UNDG BESTR LING.
ADVARSEL -LASERSTR LING N R DEKSEL PNES. UNNG EKSPONERING FOR STR LEN.

Figure 1-603-6 Label on the 230-V Model

D. Safety of Toner

Toner is non-toxic matter composed of plastic, iron, and small amounts of dyes.

If your skin or clothes have come into contact with toner, be sure to remove as much of it as possible with tissue paper and then wash with water. Hot water will cause toner to turn jelly and become fused with cloth fibers, resisting removal.

Further, toner tends to react to vinyl material. Keep it away from vinyl materials.

Caution:

Do not dispose of toner into fire. It can lead to explosion.

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VII . IMAGE FORMATION

A. Outline

Figure 1-701 shows the construction of the copier, which uses an indirect photostatic method of image reproduction.

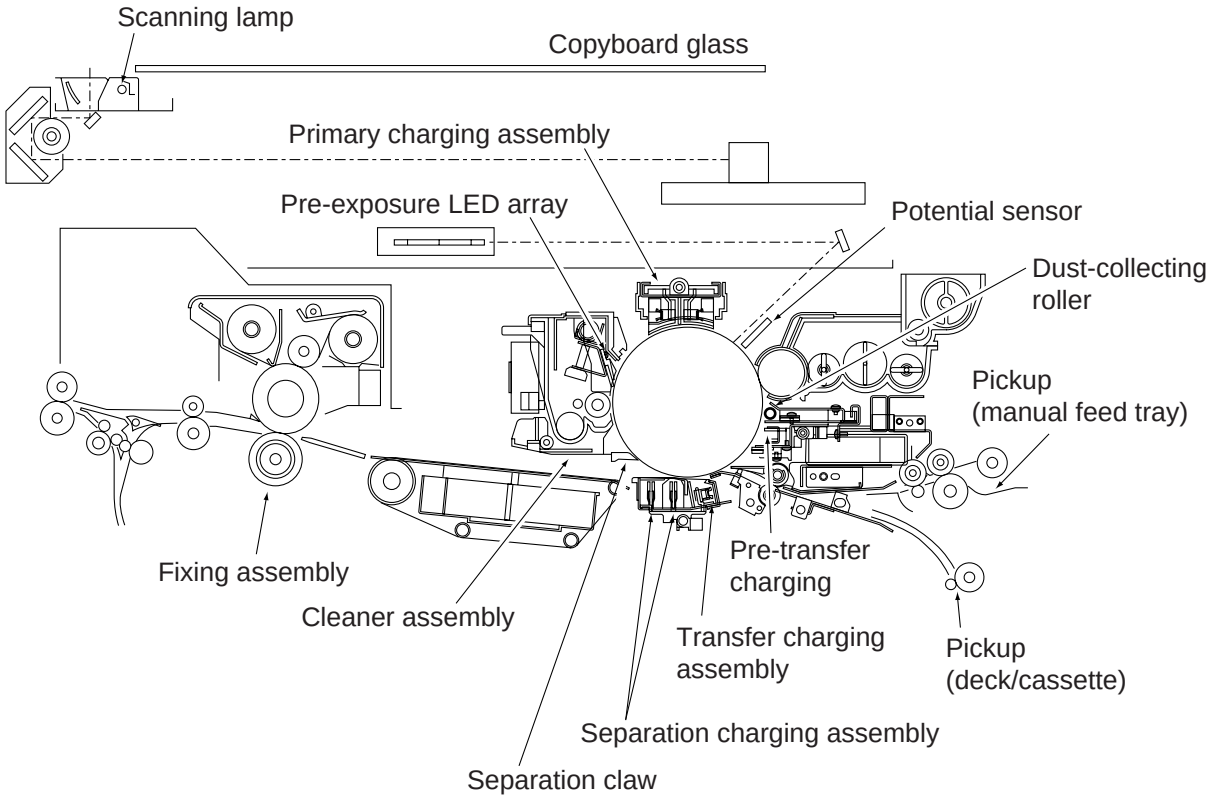


Figure 1-701 Construction

The copier forms images in the following eight steps:

Step 1 Pre-exposure
Step 2 Primary charging (positive DC)
Step 3 Laser exposure
Step 4 Development (AC + positive DC)
Step 5 Transfer (negative DC)
Step 6 Separation (AC + positive DC)
Step 7 Fixing
Step 8 Drum cleaning

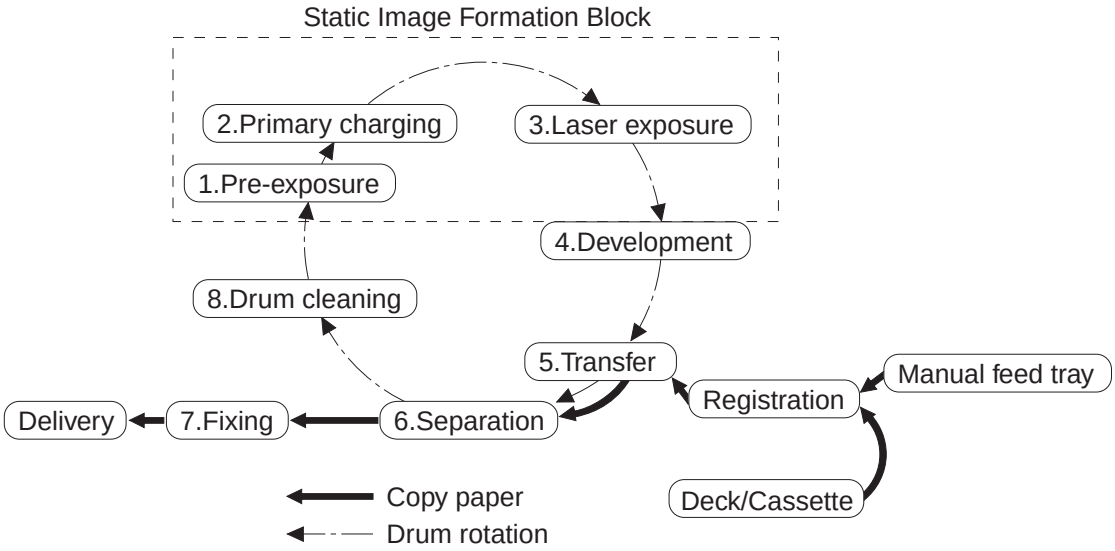


Figure 1-702

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CHAPTER 2

BASIC OPERATIONS

This chapter provides descriptions on basic operations, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

I. BASIC OPERATIONS 2-1
- A. Functional Construction 2-1
- B. Electrical Circuitry 2-2
- C. Basic Sequence of Operations 2-5
- D. Controlling the Main Motor (M1) 2-6
- E. Inputs to and Outputs from the Major PCBs 2-7

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I . BASIC OPERATIONS

A. Functional Construction

The copier is divided into the following six functional blocks:

- Original exposure system
- Image processing system
- Laser exposure system
- Image formation system
- Pickup/feeding system
- Control system

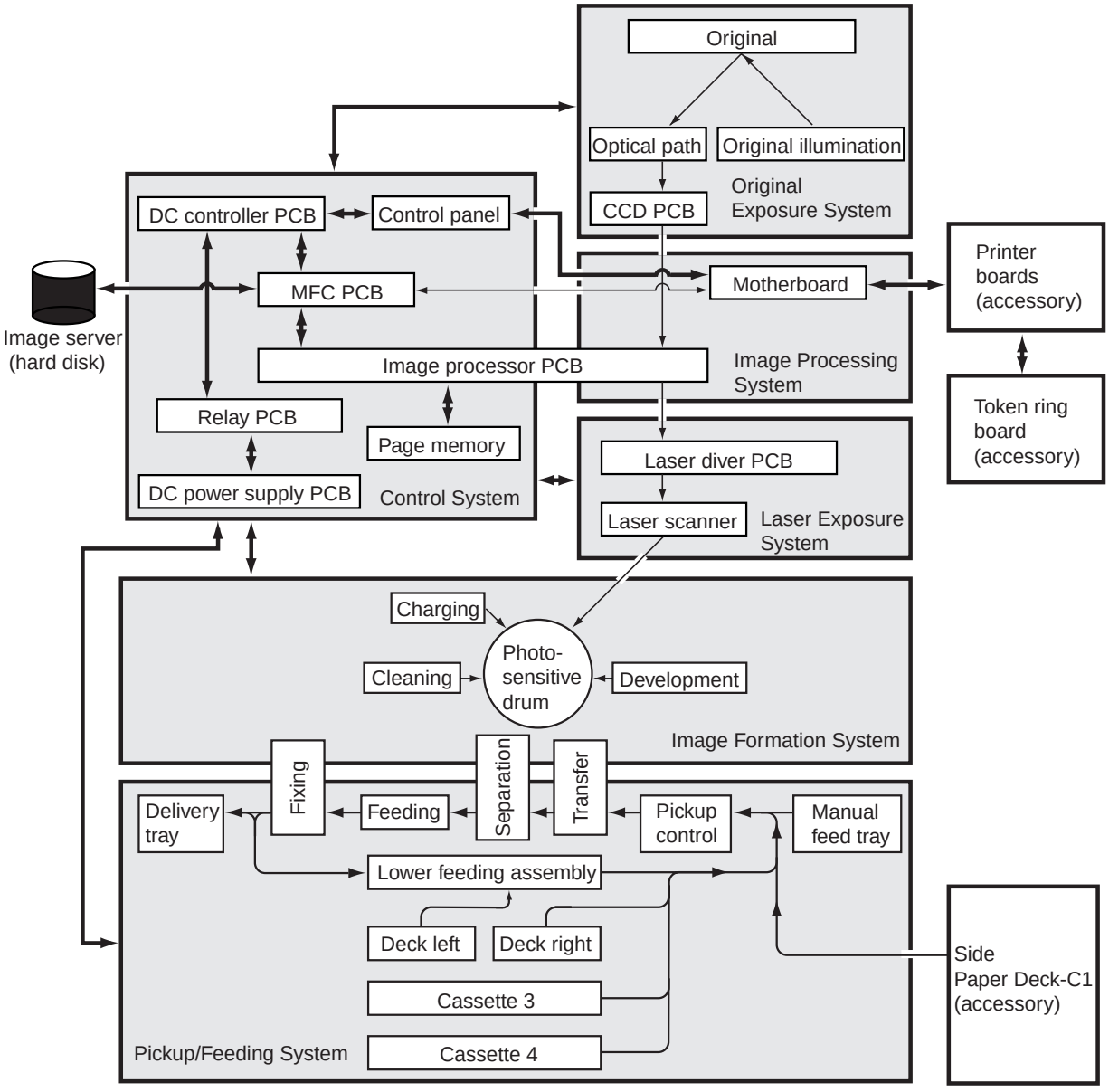


Figure 2-101

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B. Electrical Circuitry

1. Outline

The copier's major electrical mechanisms are controlled by the CPU on the MFC PCB, image processor PCB, and DC controller PCB. The following tables show the control functions assigned to each CPU and the ICs and their functions used around the CPUs (RAMs, DIMMs).

2. MFC PCB

Name	Description
CPU	• Controls the control panel, hard disk, and personal box image management. • Controls job management, operation status management, and log management. • Controls PDL image transfer sequence. • Controls PDL-image processor PCB communications and service mode.
RAM	• Stores service mode data. (For details, see E. "Backup Battery" in Chapter 9 "Externals and Auxiliary Control.") • Stores user mode data. (For details, see E. "Backup Battery" in Chapter 9 "Externals and Auxiliary Control.")
DIMM	• Controls programs.

Table 2-101 Control Items

3. Image Processor PCB

Name	Description
CPU	• Controls the fixing temperature, original scanning lamp, high voltage, potential, and toner supply. • Controls paper feeding, image processing, scanner reading, and copying sequence. • Controls printing sequence, output management, and ADF. • Controls the sorter (accessory) and communications control device (accessory). • Controls the page memory management mechanism and hard disk image input/output. • Controls service mode.
RAM	• Stores service mode data. (For details, see E. "Backup Battery" in Chapter 9 "Externals and Auxiliary Control.") • Stores user mode data. (For details, see E. "Backup Battery" in Chapter 9 "Externals and Auxiliary Control.") • Stores pickup/delivery counter readings.
DIMM	• Controls programs (used to control the input/output ports on the DC controller PCB).

Table 2-102 Control Items

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4. DC Controller PCB

Name	Description
CPU (built-in ROM)	• Controls the scanner motor drive mechanism, reversal motor drive mechanism, and duplexing feeding motor drive mechanism. • Controls the cassette size detection mechanism and charging wire cleaning motor drive mechanism. • Controls lifter drive.

Table 2-103 Control Items

5. Control Panel CPU PCB

Name	Description
CPU	• Monitors key inputs. • Controls buzzer sound. • Tuns on/off the LCD.

Table 2-104 Control Items

6. Original Orientation Detection PCB

Name	Description
CPU	• Controls the original orientation detection mechanism.

Tale 2-105 Control Items

7. Image Server

Name	Description
Hard disk	• Stores form images. • Stores mail box images. • Stores the error history. • Stores the jam history. • Stores the job history.

Table 2-106 Control Items

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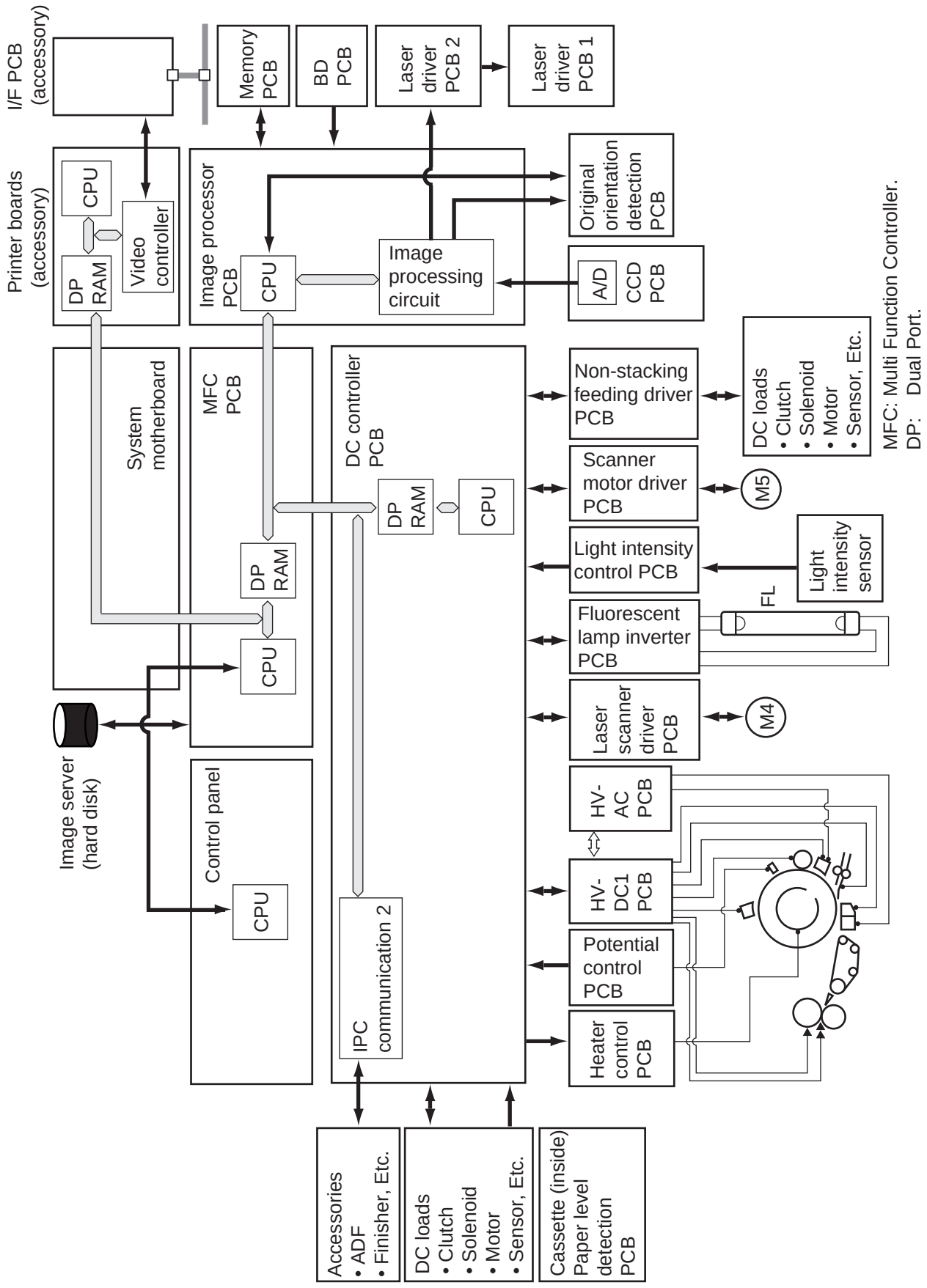


Figure 2-102 Relationship of Major PCBs

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C. Basic Sequence of Operations

1. Basic Sequence of Operations (power-on)

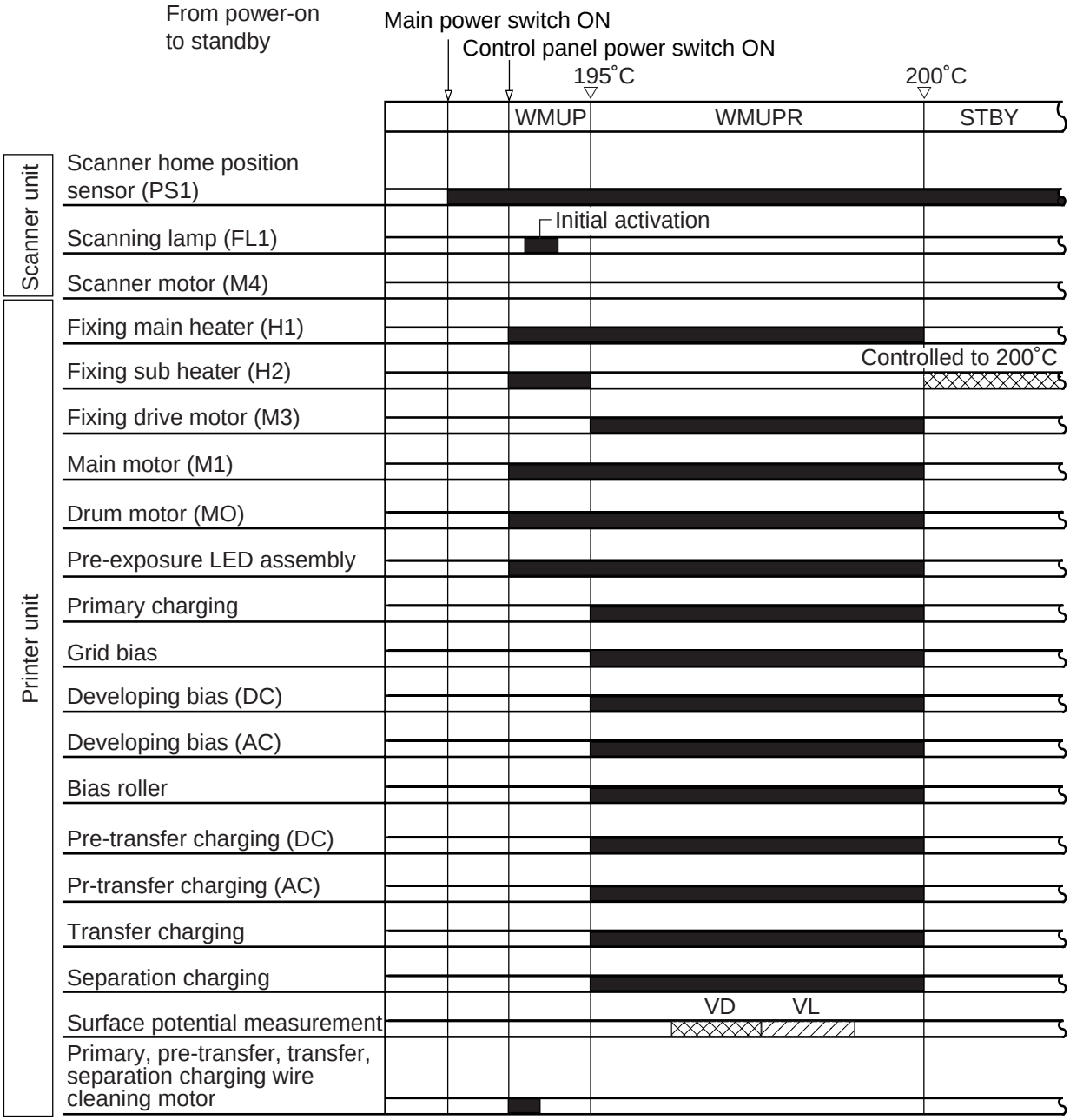


Figure 2-103

Period	Description
WMUP (warm-up)	From when the power switch is turned on to when the surface temperature of the fixing assembly reaches 195°C.
WMUPR (warm-up rotation)	To execute potential stabilization control and surface potential control.

Table 2-107

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D. Controlling the Main Motor (M1)

1. Outline

Table 2-108 shows the functions of the main motor control circuit, and Figure 2-104 is a block diagram of the circuit.

Item	Description
Power supply	38 V from the relay PCB.
Drive signal	Signals (MAIN_MOTOR_ON) from the DC controller PCB.
Operating/drive assembly	Waste toner feeding screw Cleaner assembly Feeding belt Internal delivery roller External delivery roller Reversing roller Separation claw (reciprocating operation) Developing assembly unit (through CL10)
Control	ON/OFF control Constant speed control
Error detection	Error code E010

Table 2-108

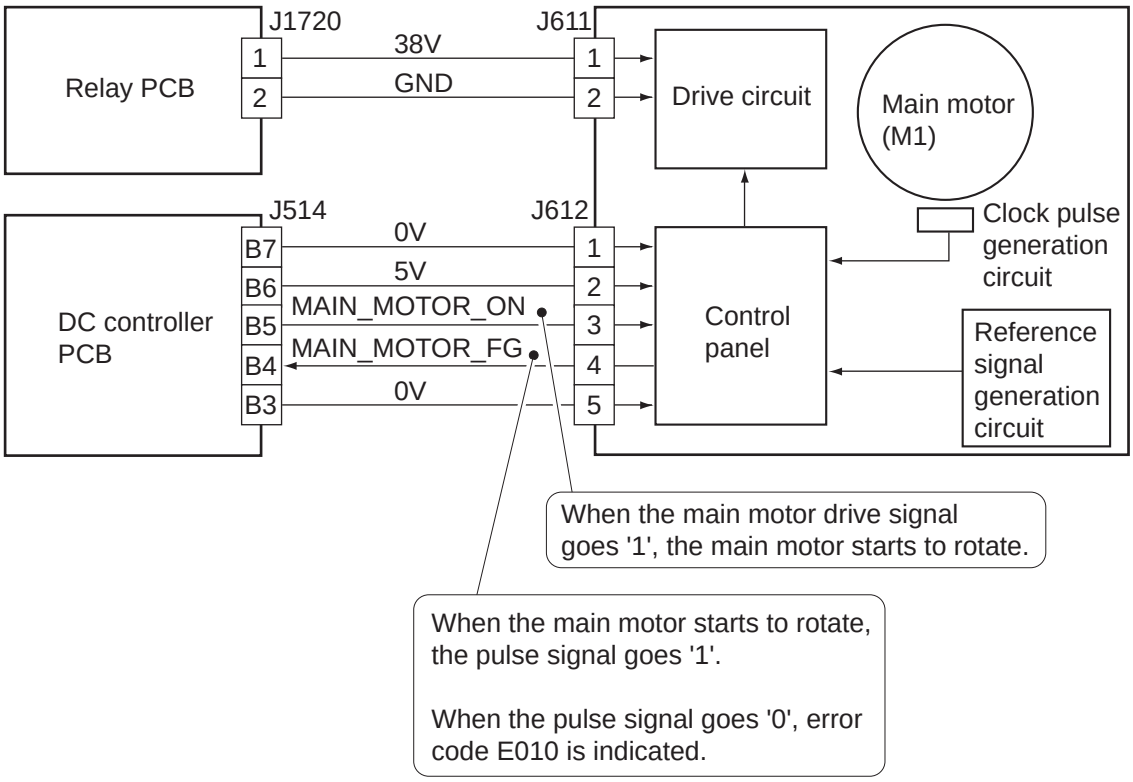
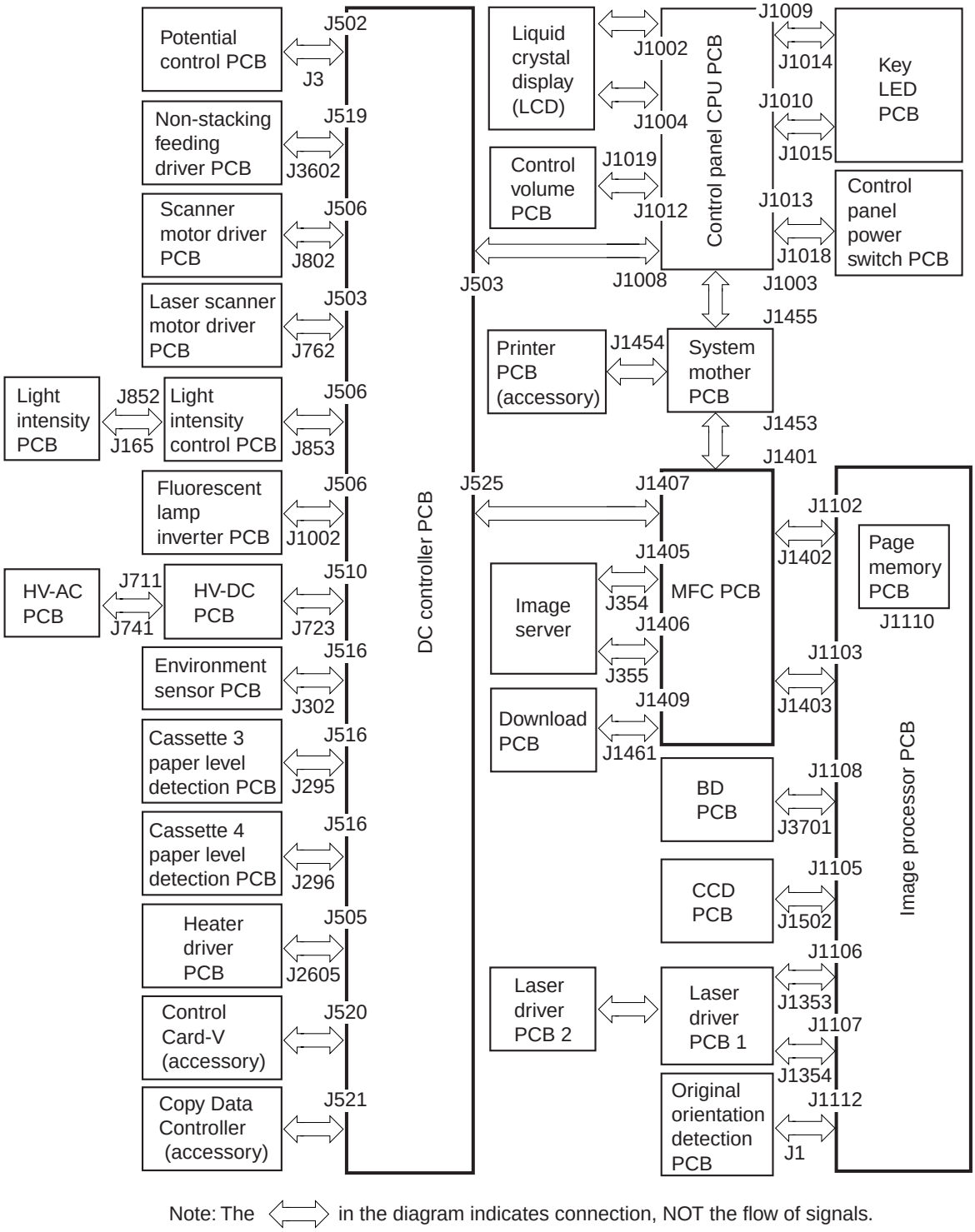


Figure 2-104 Control Circuit Block Diagram

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E. Inputs to and Outputs from the Major PCBs

1. Wiring Diagram of Major PCBs



Note: The ⟺ in the diagram indicates connection, NOT the flow of signals.

Figure 2-105 Wiring Diagram of Major PCBs

2. Inputs to the DC Controller PCB

• Inputs to the DC Controller PCB (1/6)

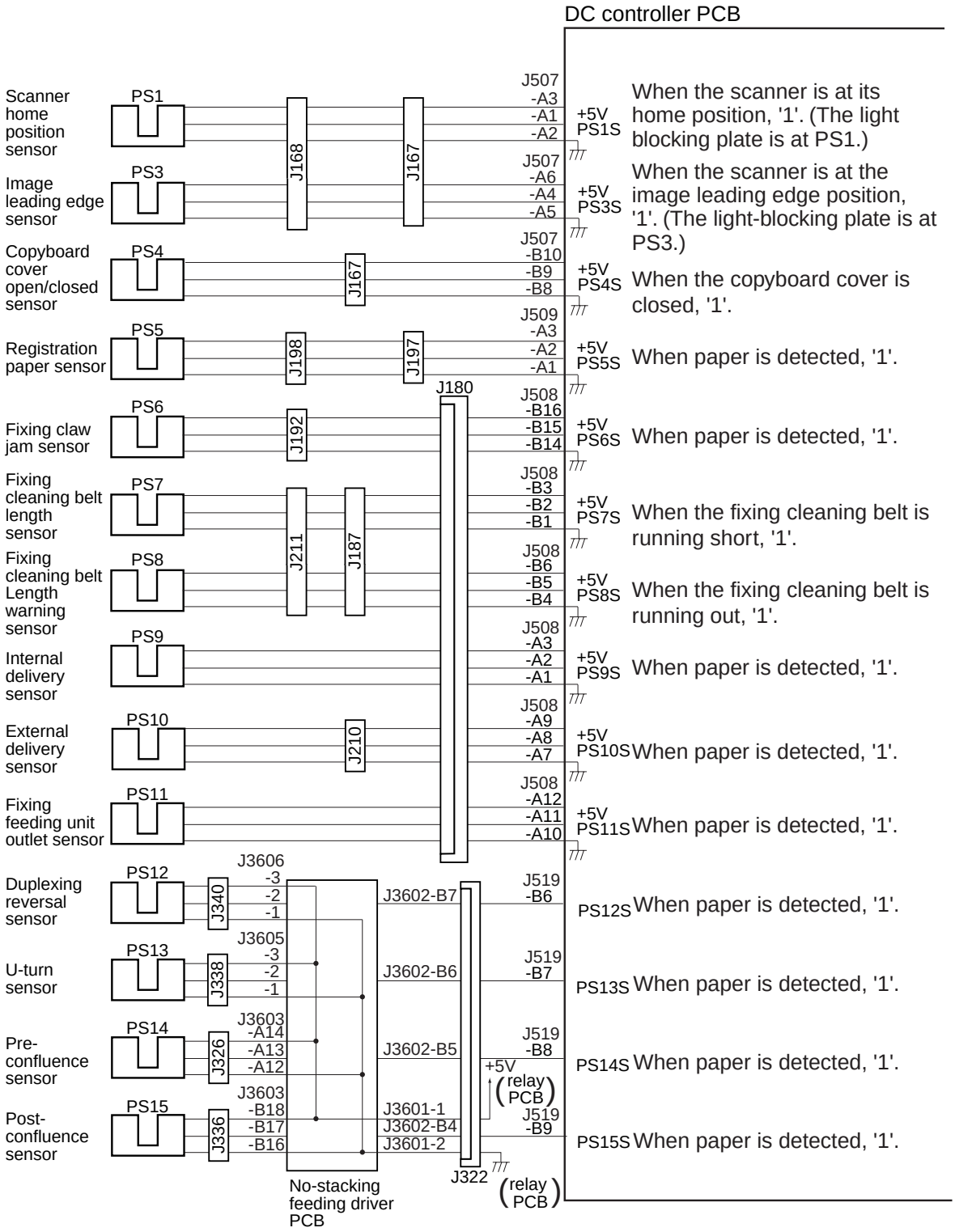


Figure 2-106 Inputs to the DC Controller PCB

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• Inputs to the DC Controller PCB (2/6)

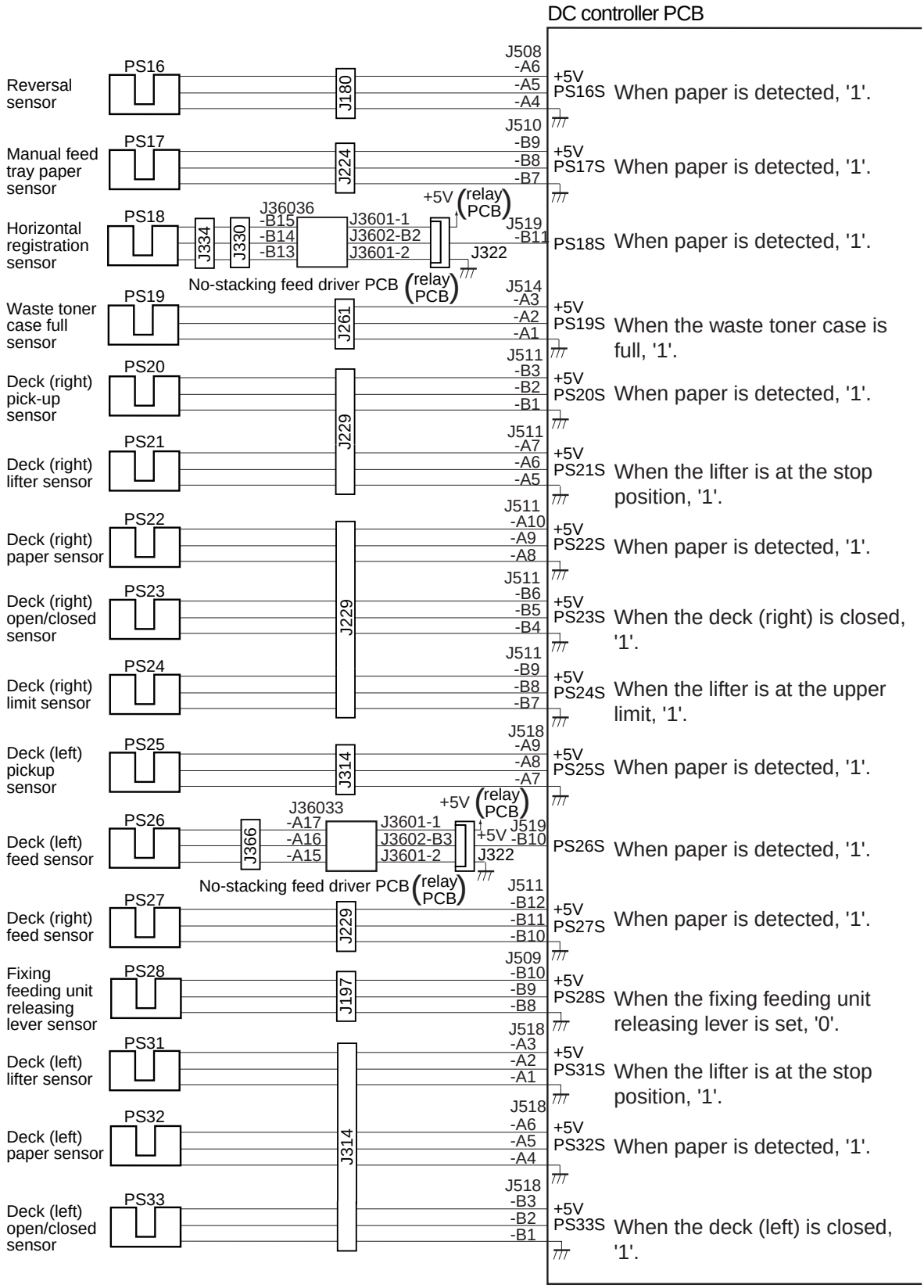


Figure 2-107 Inputs to the DC Controller PCB

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• Inputs to the DC Controller PCB (3/6)

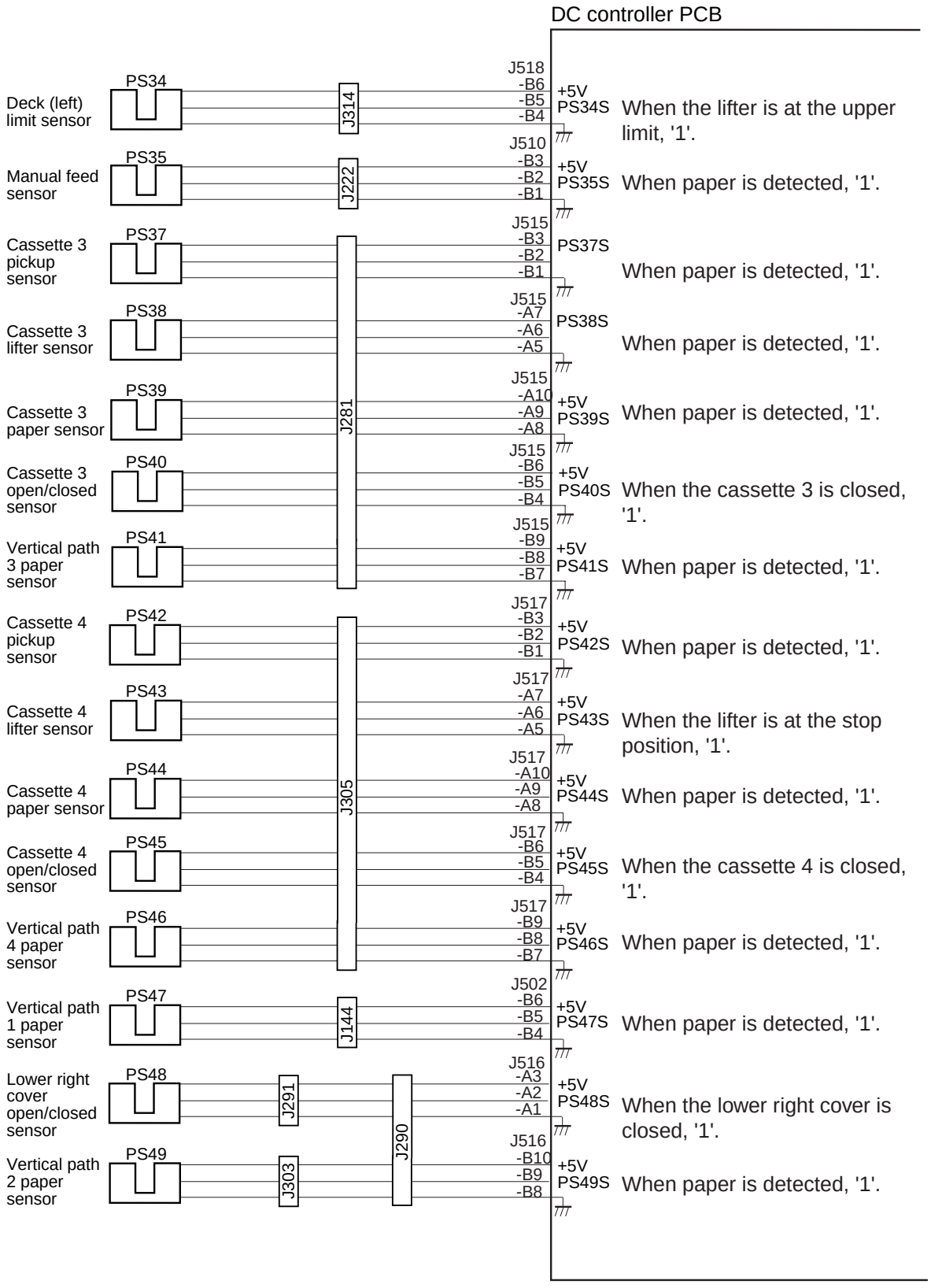


Figure 2-108 Inputs to the DC Controller PCB

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• Inputs to the DC Controller PCB (4/6)

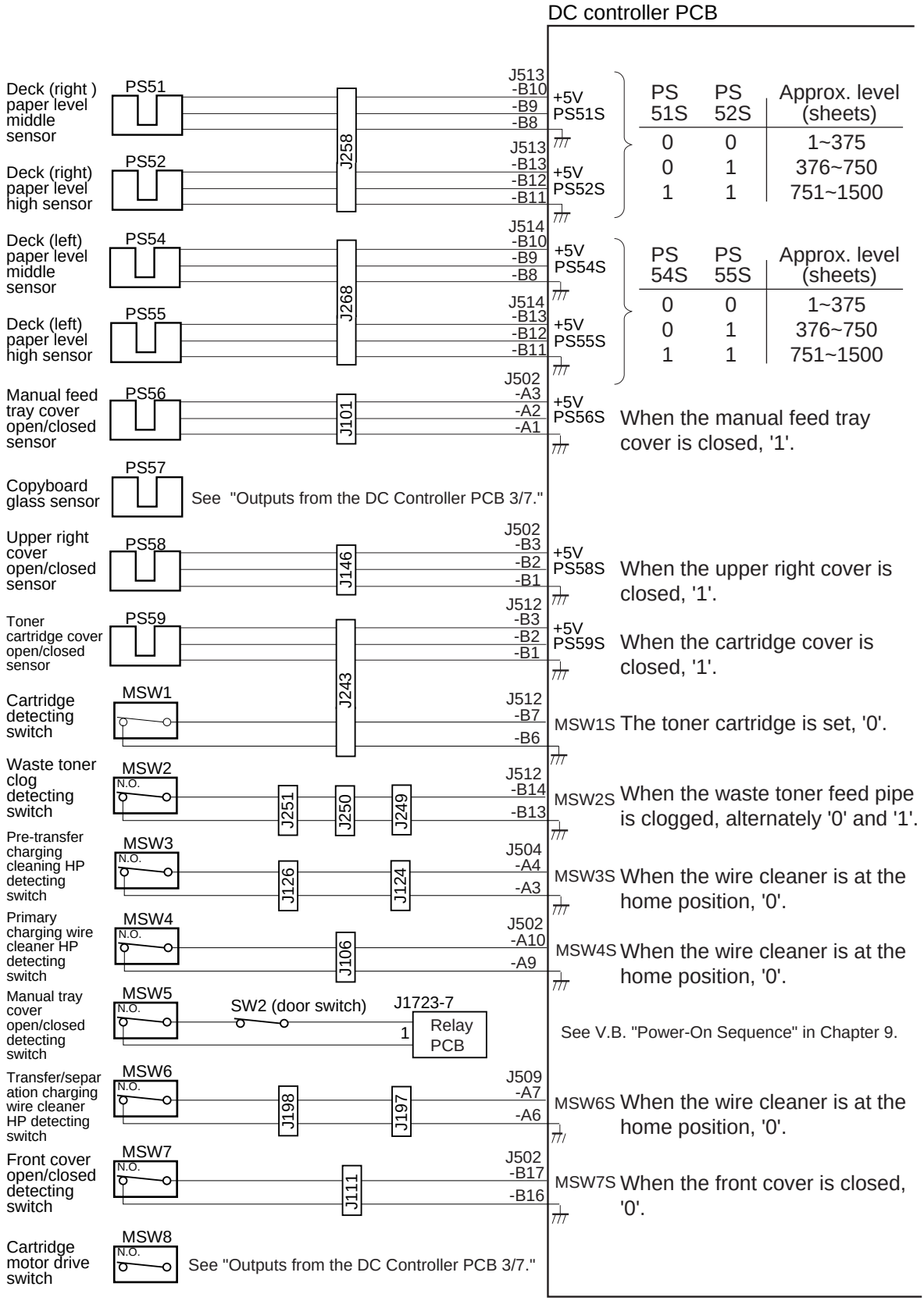


Figure 2-109 Inputs to the DC Controller PCB

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• Inputs to the DC Controller PCB (5/6)

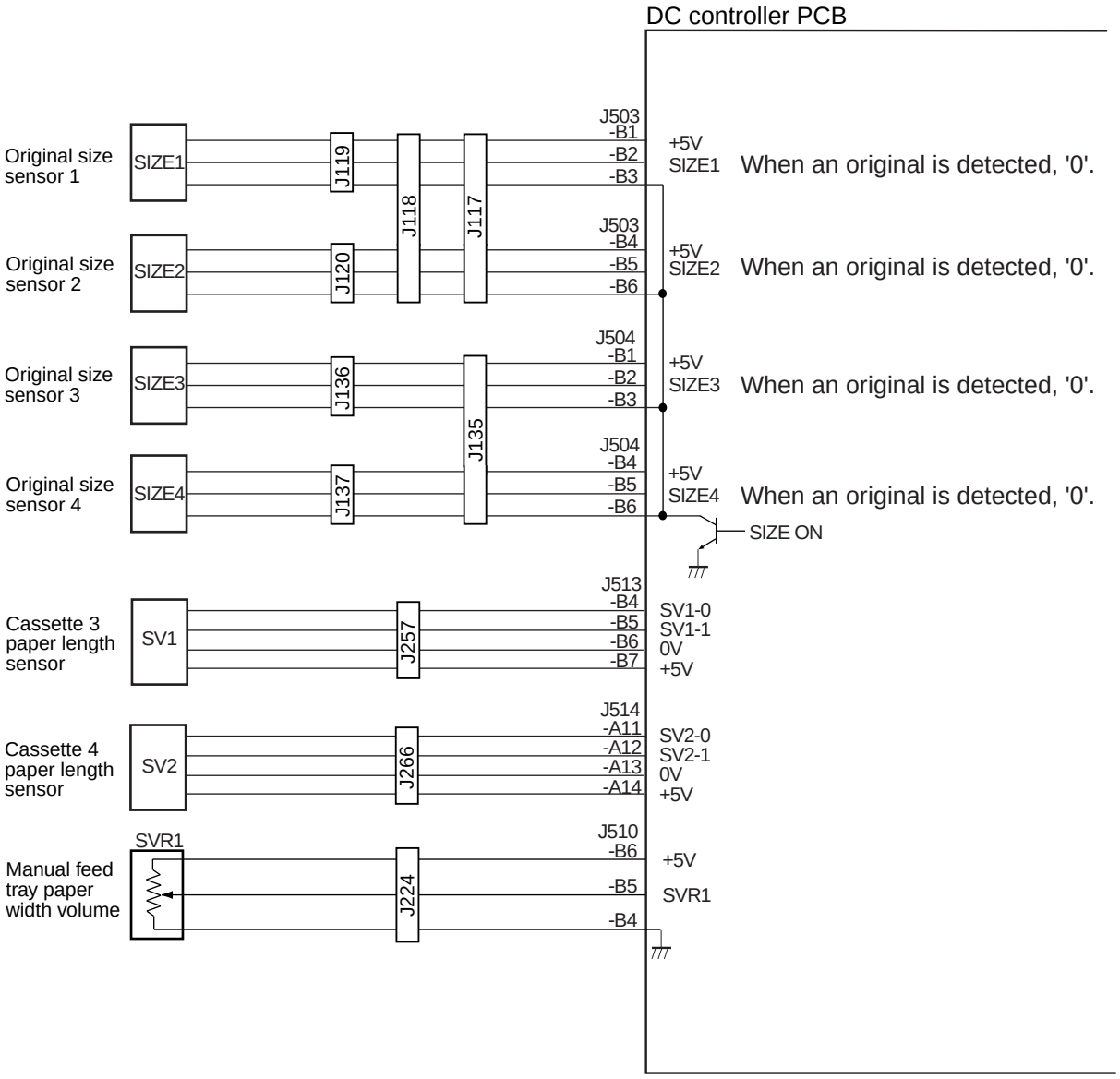


Figure 2-110 Inputs to the DC Controller PCB

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• Inputs to the DC Controller PCB (6/6)

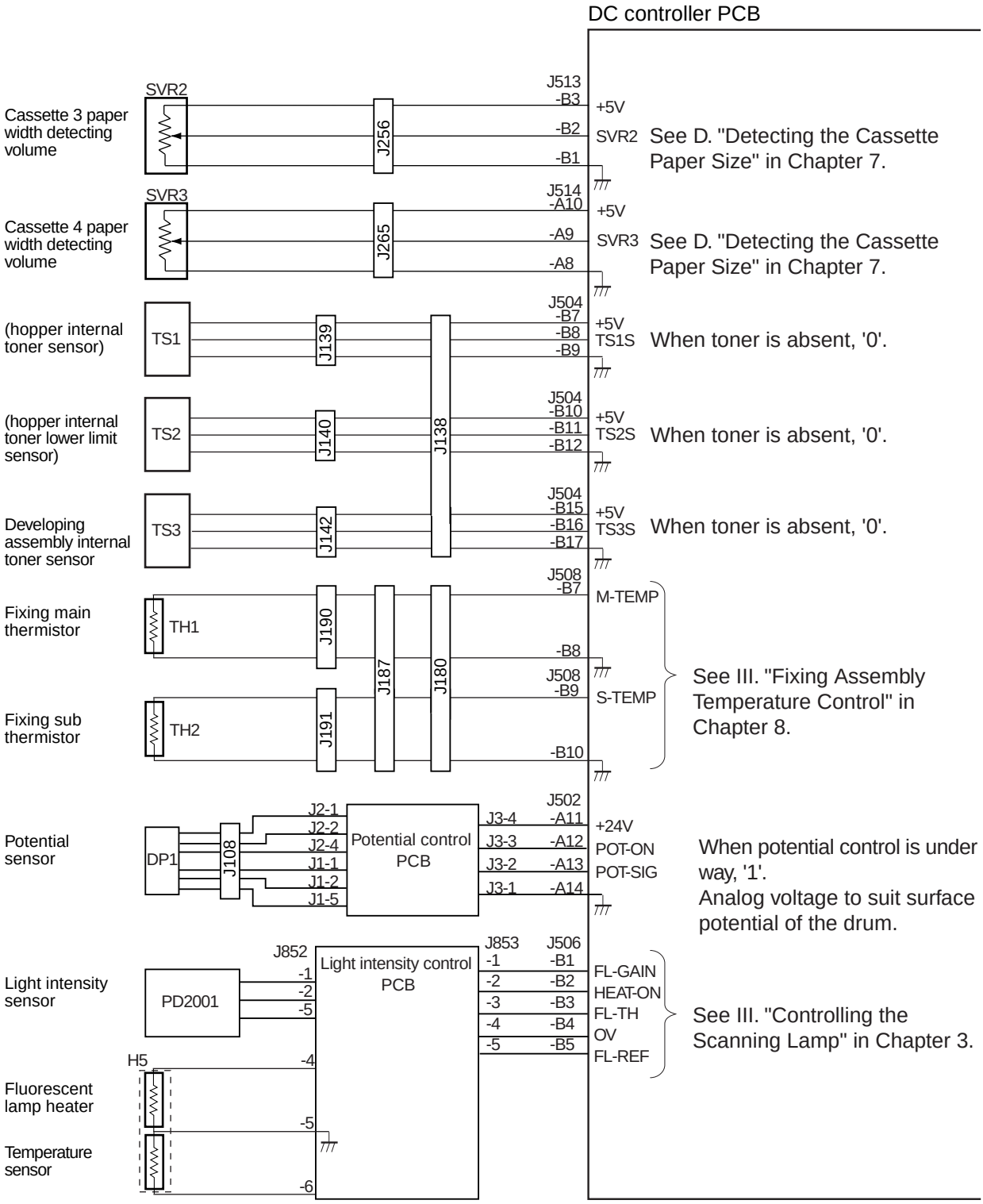


Figure 2-111 Inputs to the DC Controller PCB

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3. Outputs from the DC Controller PCB

• Outputs from the DC Controller PCB (1/7)

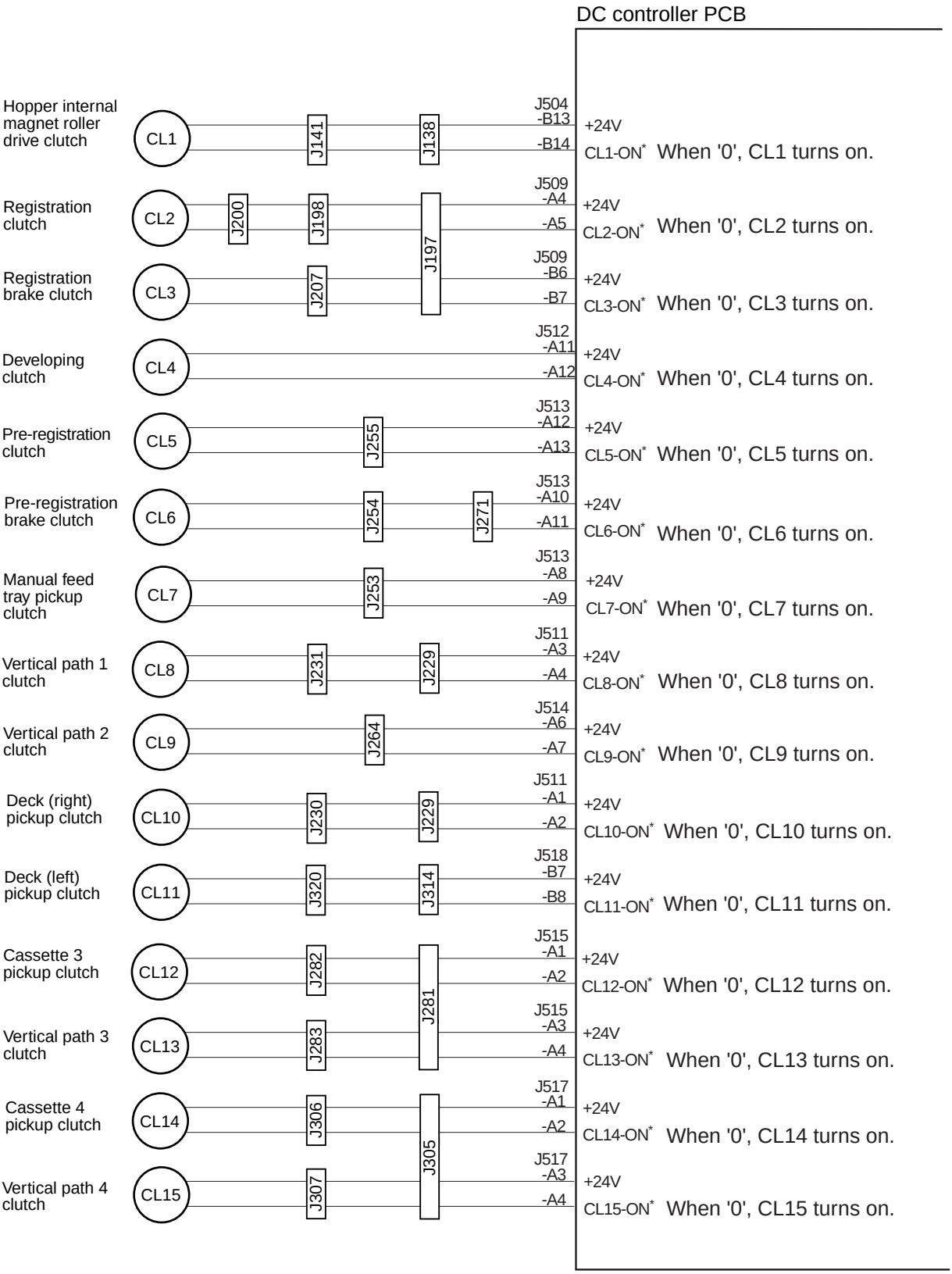


Figure 2-112 Outputs from the DC Controller PCB

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• Outputs from the DC Controller PCB (2/7)

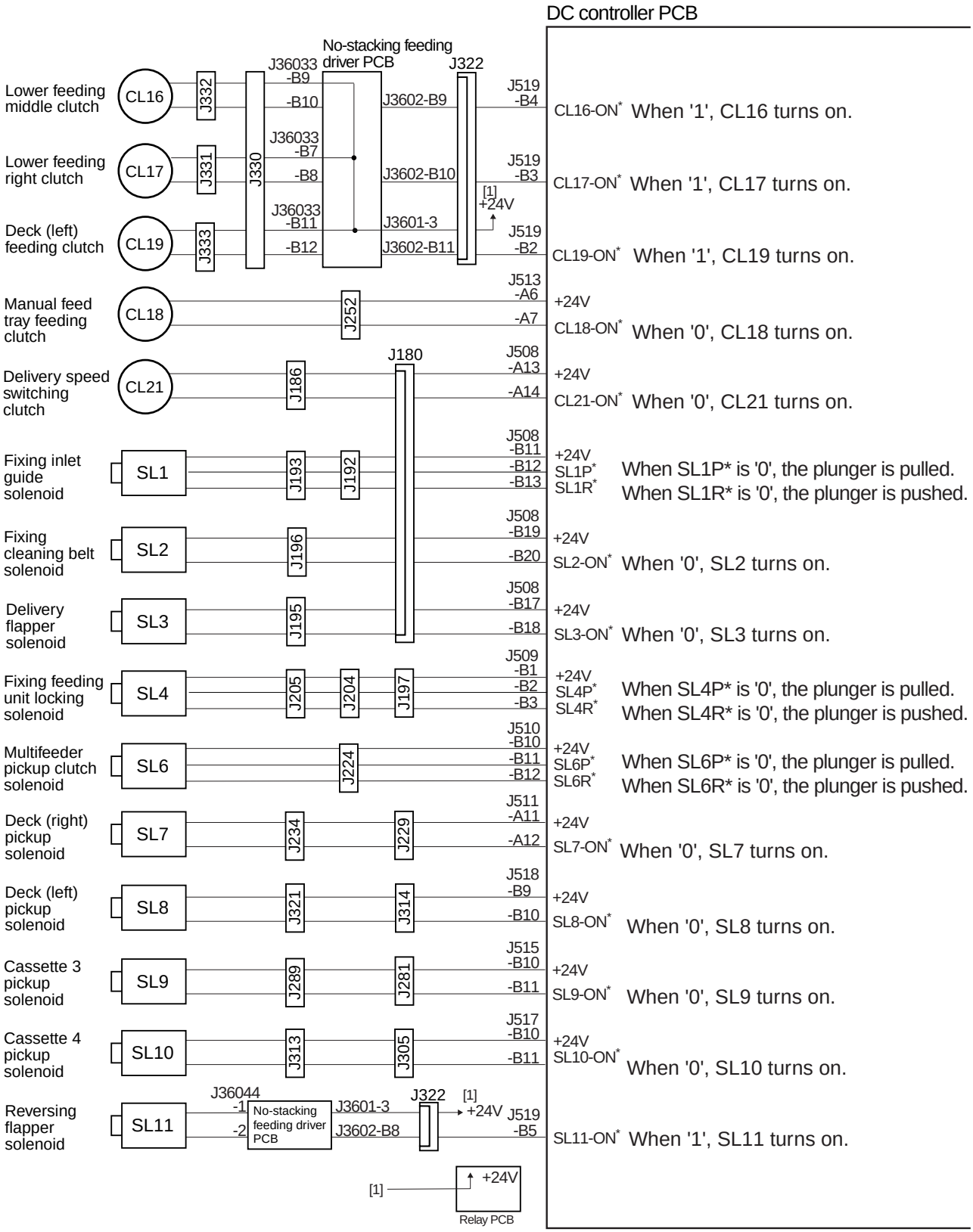

DC controller PCB
No-stacking feeding driver PCB
Lower feeding middle clutch
CL16
Lower feeding right clutch
CL17
Deck (left) feeding clutch
CL19
Manual feed tray feeding clutch
CL18
Delivery speed switching clutch
CL21
Fixing inlet guide solenoid
SL1
Fixing cleaning belt solenoid
SL2
Delivery flapper solenoid
SL3
Fixing feeding unit locking solenoid
SL4
Multifeeder pickup clutch solenoid
SL6
Deck (right) pickup solenoid
SL7
Deck (left) pickup solenoid
SL8
Cassette 3 pickup solenoid
SL9
Cassette 4 pickup solenoid
SL10
Reversing flapper solenoid
SL11
CL16-ON* When '1', CL16 turns on.
CL17-ON* When '1', CL17 turns on.
CL19-ON* When '1', CL19 turns on.
CL18-ON* When '0', CL18 turns on.
CL21-ON* When '0', CL21 turns on.
SL1P* When SL1P* is '0', the plunger is pulled.
SL1R* When SL1R* is '0', the plunger is pushed.
SL2-ON* When '0', SL2 turns on.
SL3-ON* When '0', SL3 turns on.
SL4P* When SL4P* is '0', the plunger is pulled.
SL4R* When SL4R* is '0', the plunger is pushed.
SL6P* When SL6P* is '0', the plunger is pulled.
SL6R* When SL6R* is '0', the plunger is pushed.
SL7-ON* When '0', SL7 turns on.
SL8-ON* When '0', SL8 turns on.
SL9-ON* When '0', SL9 turns on.
SL10-ON* When '0', SL10 turns on.
SL11-ON* When '1', SL11 turns on.
+24V
Relay PCB

Figure 2-113 Outputs from the DC Controller PCB

• Outputs from the DC Controller PCB (3/7)

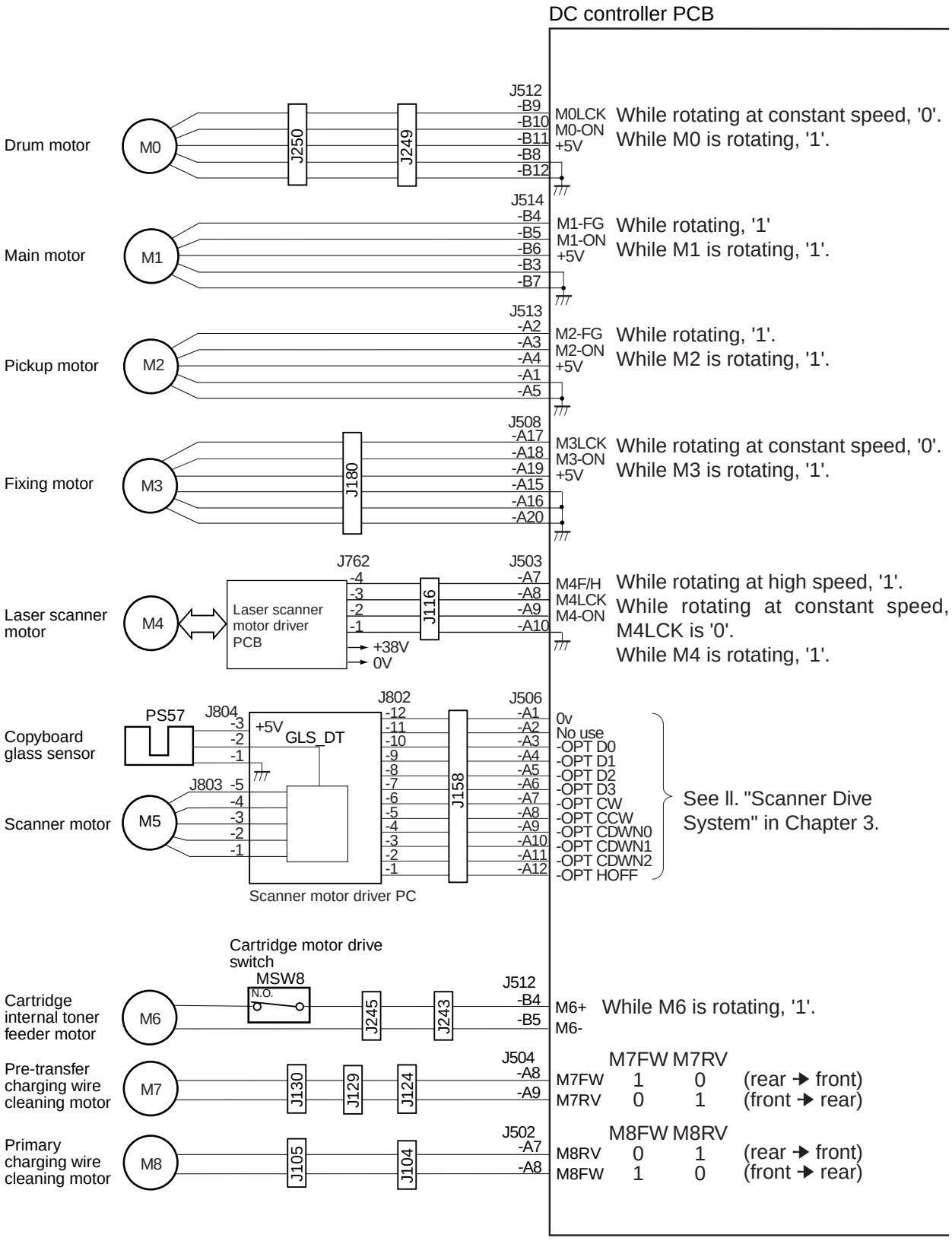


Figure 2-114 Outputs from the DC Controller PCB

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• Outputs from the DC Controller PCB (4/7)

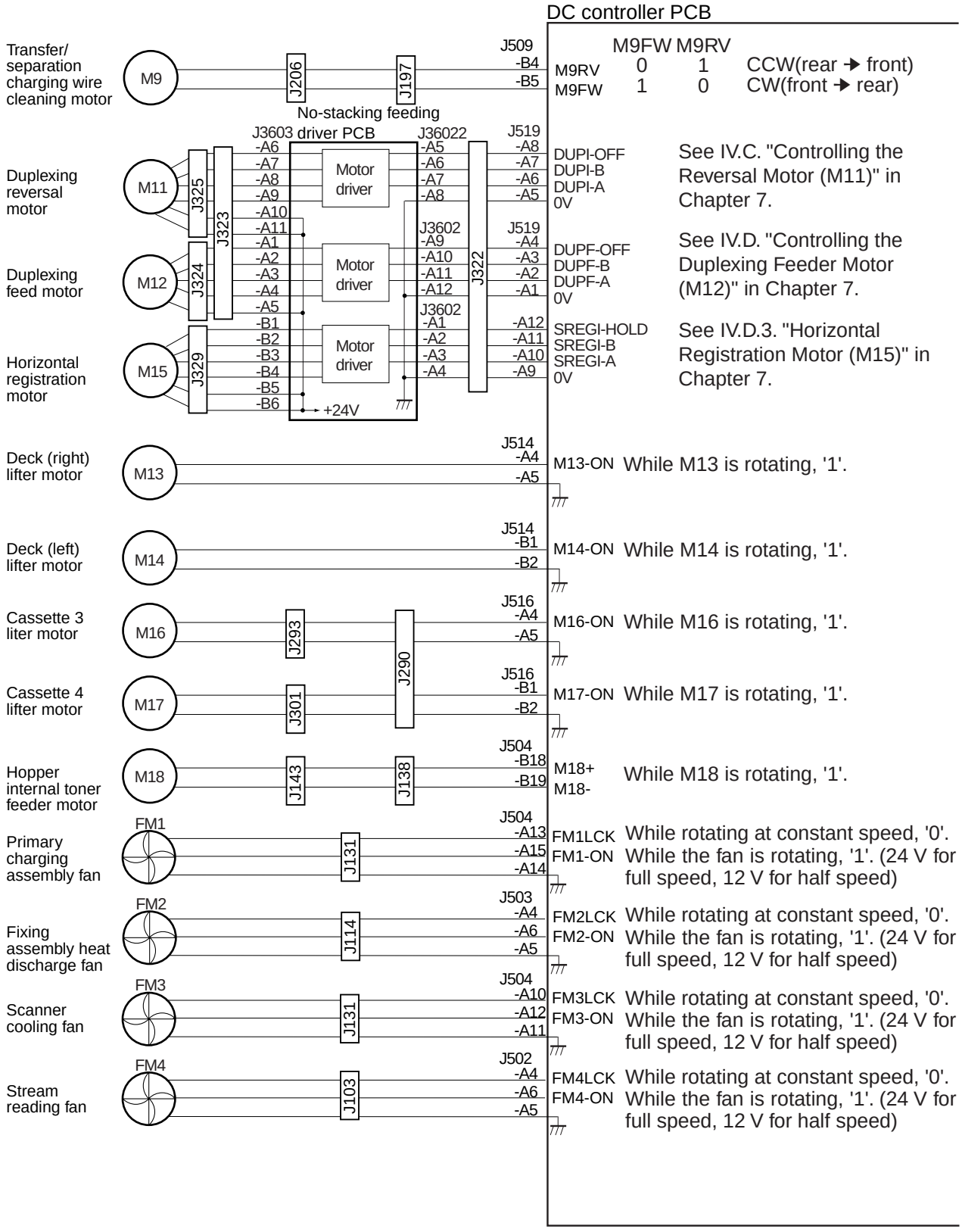


Figure 2-115 Outputs from the DC Controller PCB

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• Outputs from the DC Controller PCB (5/7)

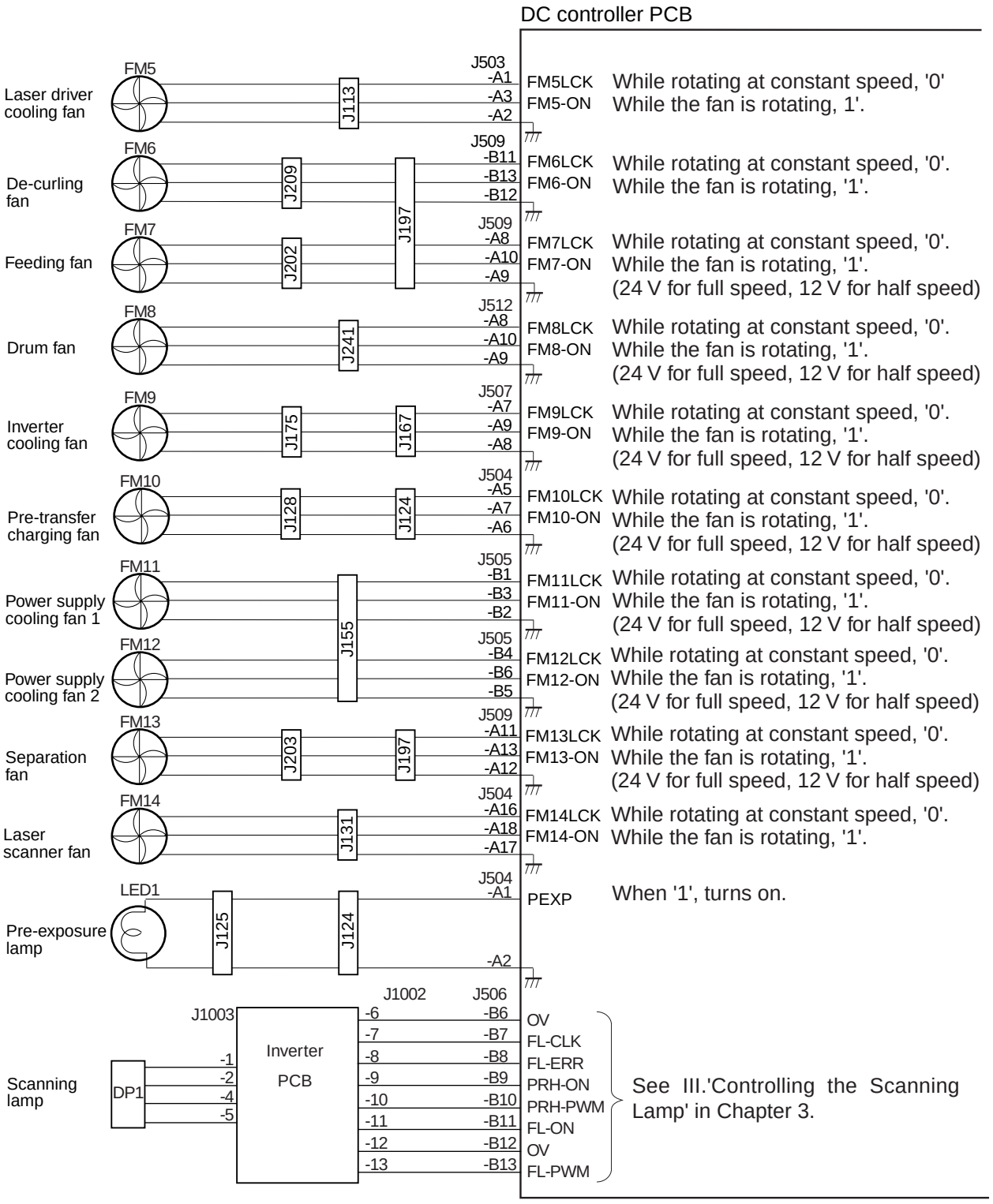


Figure 2-116 Outputs from the DC Controller PCB

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• Outputs from the DC Controller PCB (6/7)

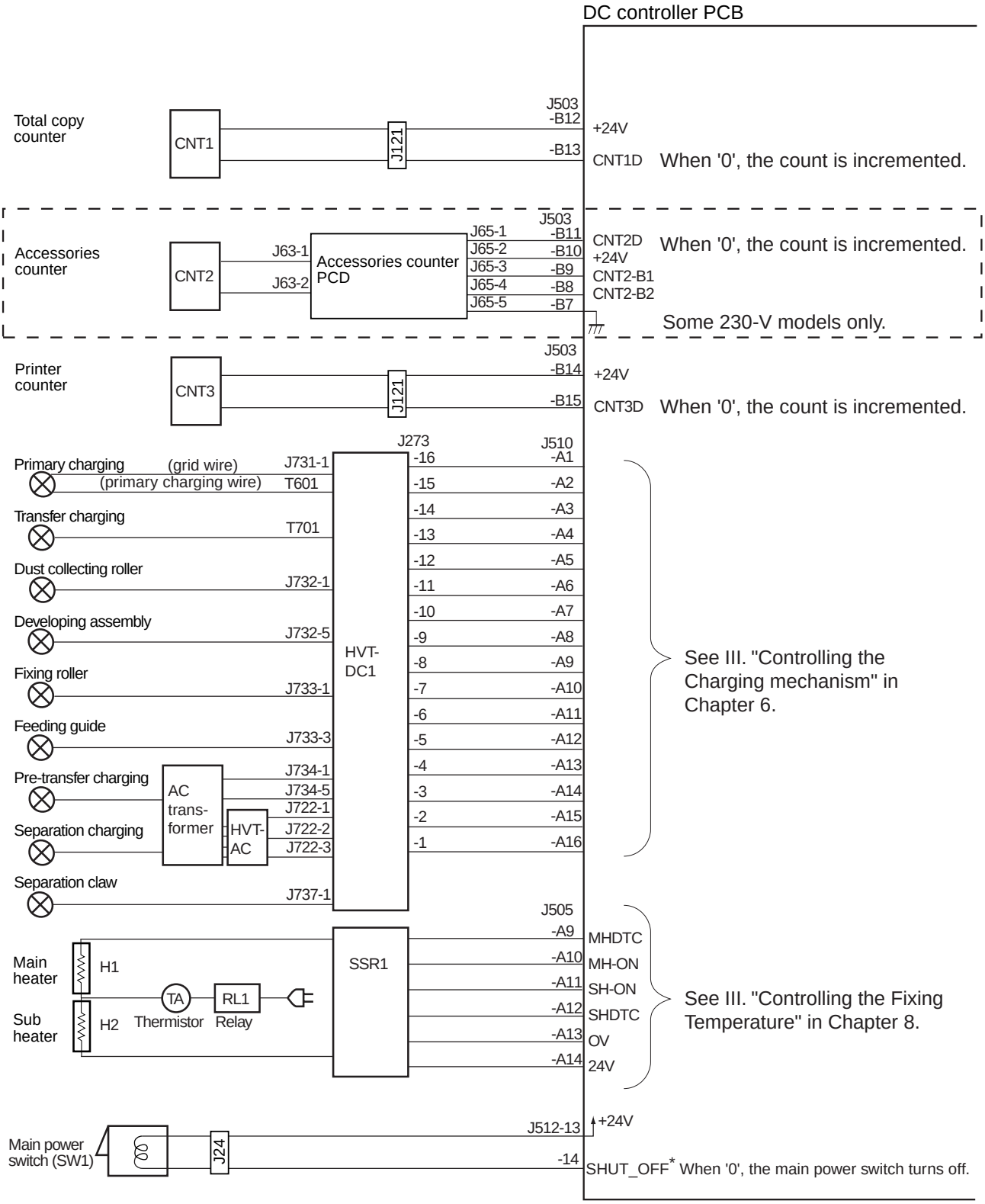


Figure 2-117 Outputs from the DC Controller PCB

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• Outputs from the DC Controller PCB (7/7)

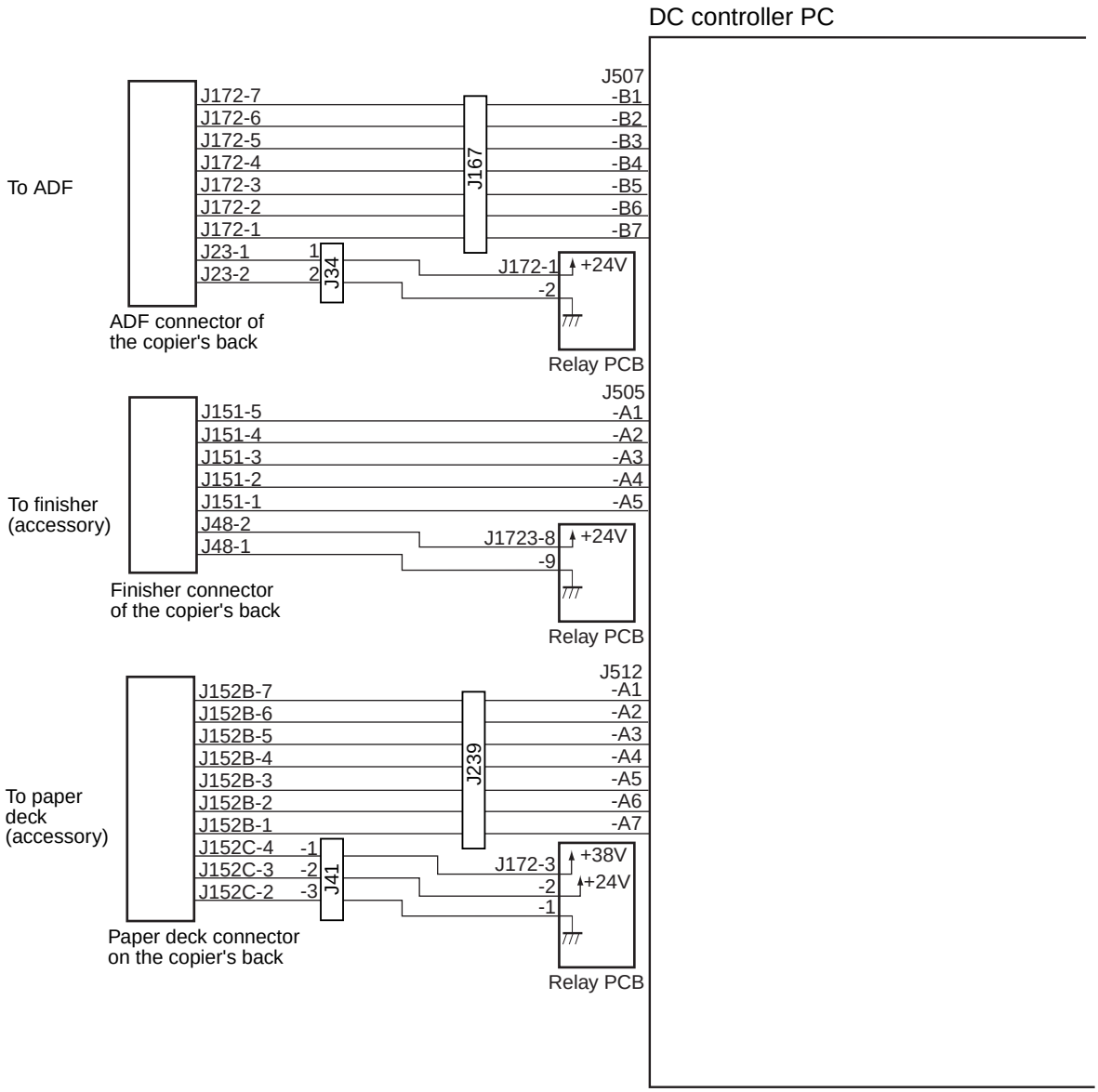


Figure 2-118 Outputs from the DC Controller PCB

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CHAPTER 3

ORIGINAL EXPOSURE SYSTEM

This chapter provides descriptions on the operations and the functions of the scanner drive mechanism and the original detection mechanism, relationship between electrical and mechanical systems, and timing at which each associated part is turned on.

I. OPERATIONS 3-1
A. Outline 3-1
B. Basic Sequence of Operations 3-3
C. Changing the Reproduction Ratio 3-4
II. SCANNER DRIVE SYSTEM 3-5
A. Outline 3-5
B. Controlling the Scanner Motor 3-6
III. CONTROLLING THE SCANNING LAMP 3-8
A. Outline 3-8
B. Controlling the Temperature by a Fluorescent Lamp Heater 3-10
C. Controlling Pre-Heat Voltage 3-10
D. Initial Activation 3-11
E. Detecting an Error 3-12
IV. DETECTING THE ORIGINAL SIZE 3-14
A. Outline 3-14
B. Detection by Original Sensors 3-14
C. Detection by the Feeder 3-14
V. DISASSEMBLY/ASSEMBLY 3-15
A. No. 1 Mirror Mount 3-16
B. Scanner Drive Assembly 3-20
C. PCBs 3-28
D. Others 3-31

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I . OPERATIONS

A. Outline

Table 3-101 shows the major functions of the original exposure system.

Item	Description
Original illumination	Illumination by a fluorescent lamp
Original scanning	Book mode: scanning by the No. 1 mirror mount ADF mode (one-side reading): scanning by stream reading (2 fixed points of small-size reading and large-size reading) ADF mode (double-sided reading): scanning by the No. 1 mirror mount
Scanner position detection	By a scanner home position sensor (PS1) By an image leading edge sensor (PS3)
Enlargement/reduction	Main scanning direction: images are processed by a line memory Sub scanning direction: No. 1 mirror mount is moved at different speeds
Scanner drive control	No. 1 mirror mount: pulse control by a stepping motor (M5) Lens mount: fixed in position
Scanning lamp control	[1] Pre-heat control by a fluorescent lamp heater [2] Pre-heat voltage control [3] Initial activation control [4] Intensity control by an intensity sensor [5] Fluorescent lamp life detection
Original size detection	[1] By an original size sensor [2] By the ADF
Others	Copyboard glass sensor (PS57) Fluorescent lamp temperature sensor (H5): detects the temperature of the fluorescent lamp heater

Table 3-101 Major Functions

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Figure 3-101 shows the major components of the original exposure system.

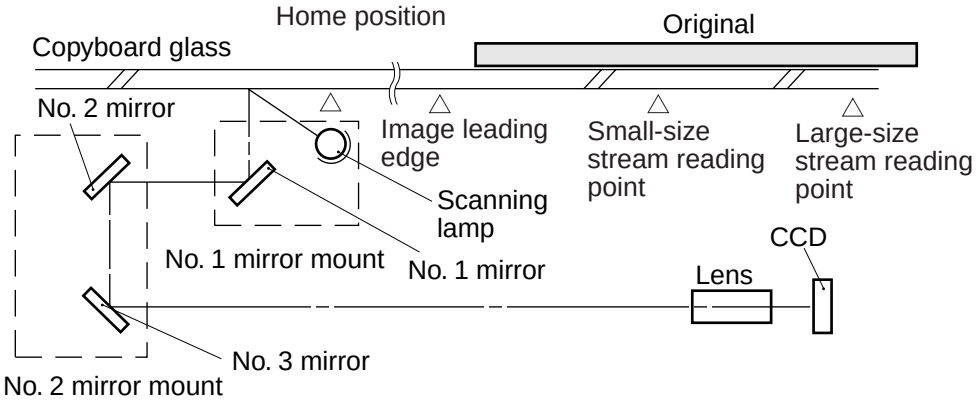


Figure 3-101 (cross sectional view)

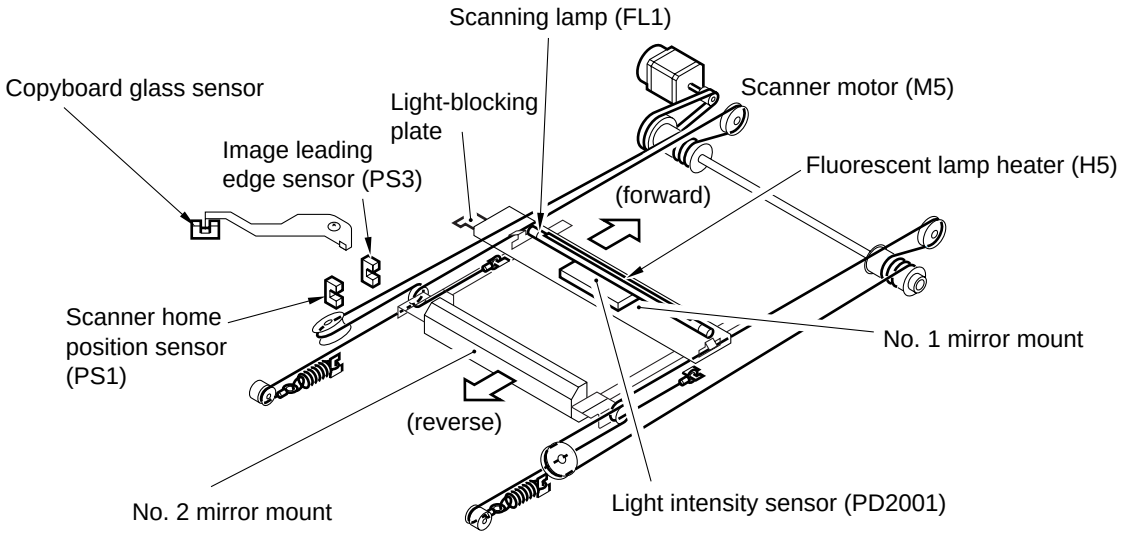


Figure 3-102 (external view)

Component	Notation	Description
Scanning lamp	FL1	Fluorescent amp (rated at 43 W)
Scanner motor	M5	5-phase stepping motor
Scanner home position sensor	PS1	Photointerrupter (detects the scanner home position)
Image leading edge sensor	PS3	Photointerrupter (detects the image leading edge)
Copyboard glass sensor	PS57	Photointerrupter (detects the presence/absence of the copyboard glass)
Fluorescent lamp temperature sensor	H5	Thermistor (detects the fluorescent lamp heater temperature)
Light intensity sensor	PD2001	Photodiode (detects the lamp light intensity)
Fluorescent lamp heater	H5	Nickel chrome line (rated at 36 W; stabilizes the temperature inside the fluorescent lamp)
Mirror		No. 1 through No. 3 mirrors

Table 3-102 Major Components

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B. Basic Sequence of Operations

• book mode, 1 original

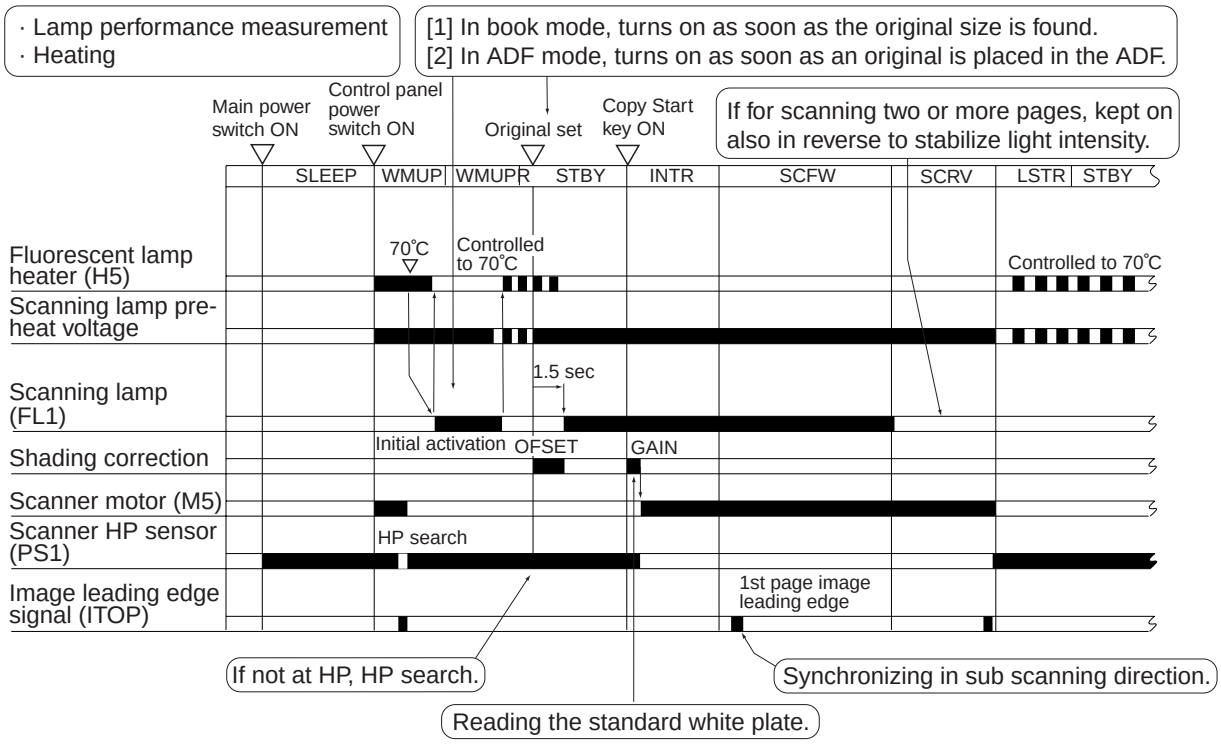


Figure 3-103 Basic Sequence of Operations

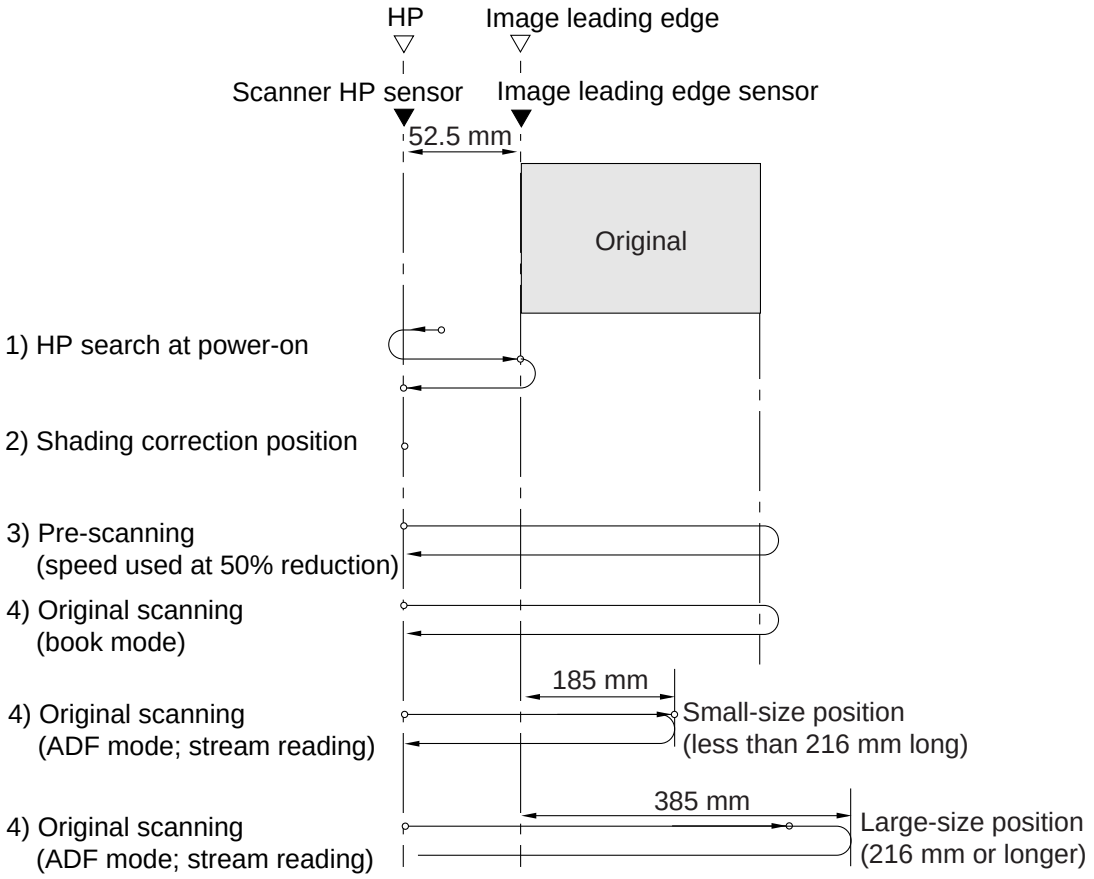


Figure 3-104 Scanner Movement

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C. Changing the Reproduction Ratio

1. Changing the Reproduction Ratio in Main Scanning Direction

🕮 Volume 3>Chapter 3>I.B. "Changing the Reproduction Ratio"

Images are processed by a line memory.

2. Changing the Reproduction Ratio in Sub Scanning Direction

🕮 Volume 3>Chapter 3>I.B. "Changing the Reproduction Ratio"

The scanning speed of the No. 1 mirror mount is varied.

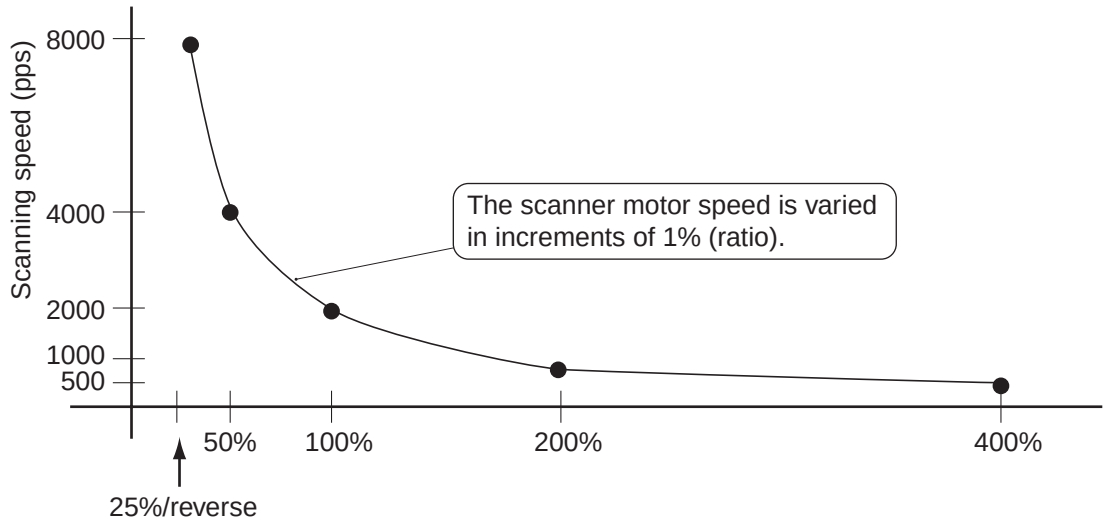


Figure 3-105 Relationship between Scanning Speed and Reproduction Ratio

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II . SCANNER DRIVE SYSTEM

A. Outline

Figure 3-201 shows the components of the scanner drive system.

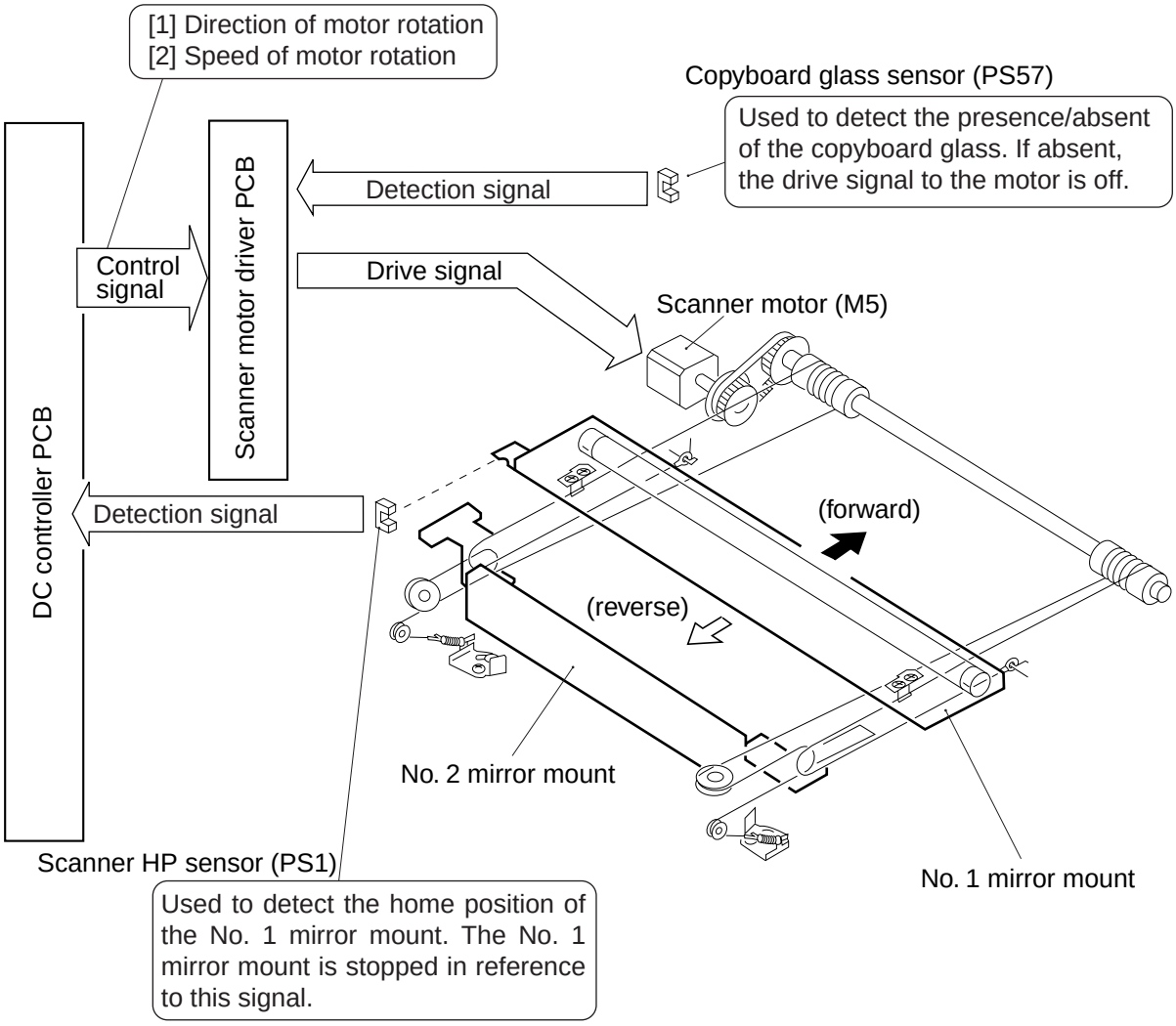

[1] Direction of motor rotation
[2] Speed of motor rotation
Copyboard glass sensor (PS57)
Used to detect the presence/absent of the copyboard glass. If absent, the drive signal to the motor is off.
Detection signal
Control signal
Scanner motor driver PCB
Drive signal
Scanner motor (M5)
DC controller PCB
Detection signal
(forward)
(reverse)
No. 2 mirror mount
No. 1 mirror mount
Scanner HP sensor (PS1)
Used to detect the home position of the No. 1 mirror mount. The No. 1 mirror mount is stopped in reference to this signal.

Figure 3-201 Components of the Scanner Drive System

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B. Controlling the Scanner Motor

Figure 3-202 shows the construction of the scanner motor control mechanism.

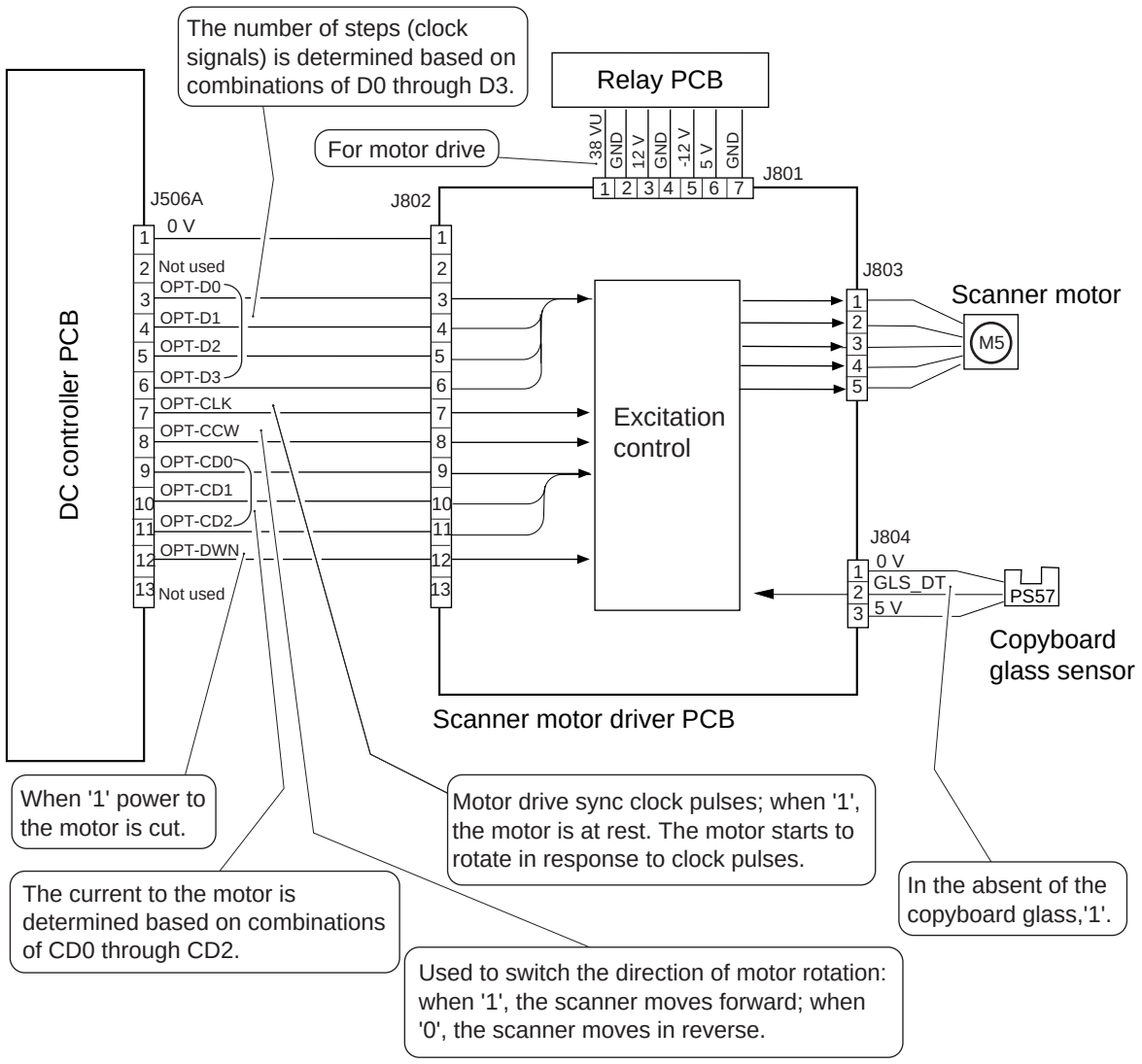


Figure 3-202 Construction of the Control System

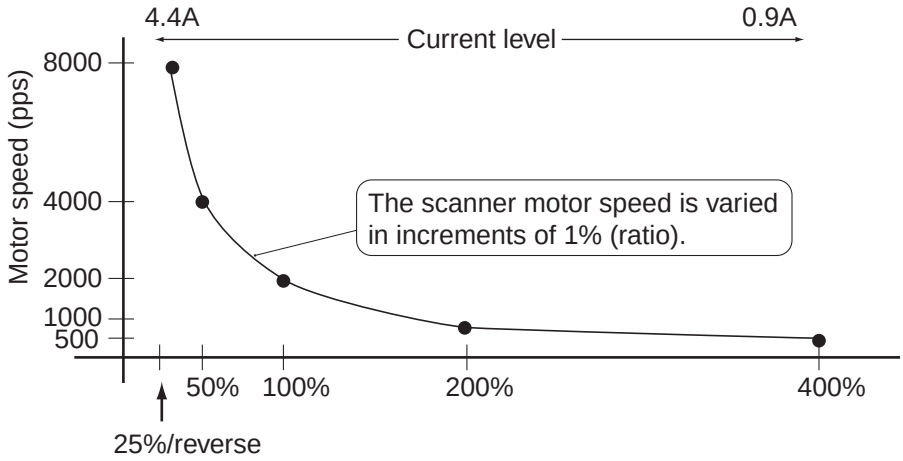


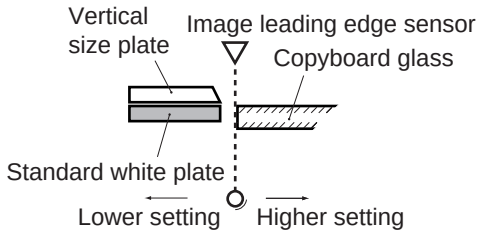
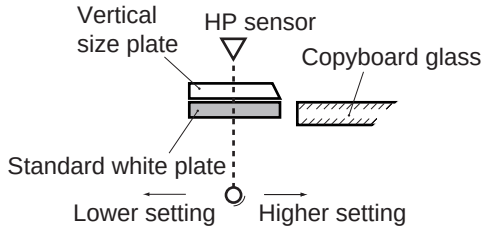
Figure 3-203 Relationship between Motor Speed and Reproduction Ratio

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Related Error Code

E202 (scanner home position detection error)	The No. 1 mirror mount does not reach the home position sensor within a specific period of time.
E204 (image leading edge detection error)	[1] The image leading edge signal is not generated when the No. 1 mirror mount is moving forward. [2] The image leading edge signal from the ADF is not generated in stream reading mode.

Related Service Mode

COPIER>ADJUST>ADJ-XY>ADJ-X (scanner image leading edge position adjustment)	Use it to adjust the image leading edge position by entering a setting.  Setting range: 0 to 2970 (a change of 12 causes a shift of 1 mm)
COPIER>ADJUST>ADJ-XY>ADJ-S (scanner home position adjustment)	Use it to adjust the home position (standard white plate read position) by entering a setting. If the standard white plate is soiled, use this mode to avoid reading the soiled area.  Setting range: 0 to 4

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III . CONTROLLING THE SCANNING LAMP

A. Outline

The scanning lamp is controlled for the following:
[1] Temperature by a fluorescent lamp heater
[2] Pre-heat voltage
[3] Initial activation
[4] Intensity by a light intensity sensor
Figure 3-301 shows the construction of the mechanisms used to control the scanning lamp.

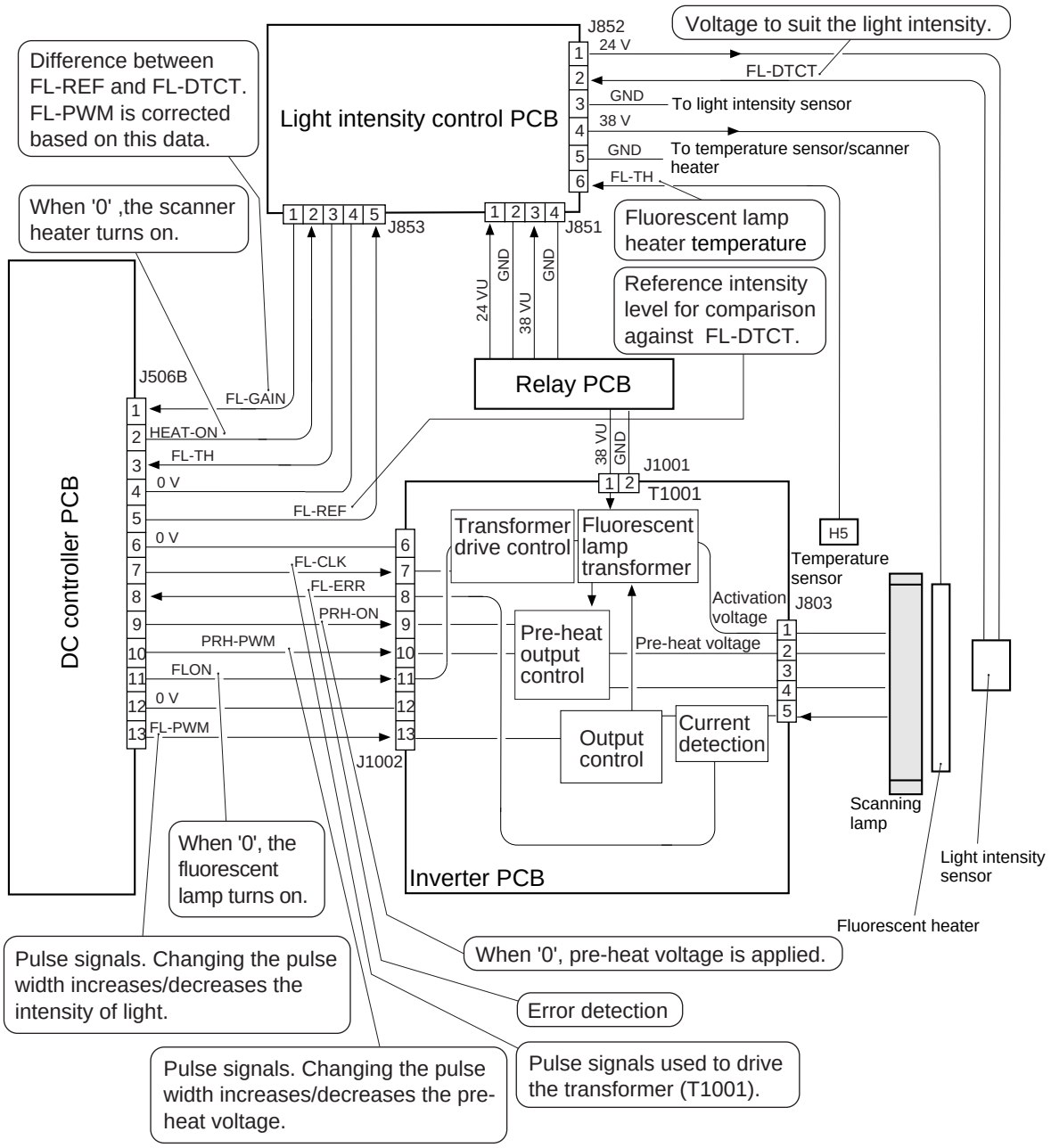
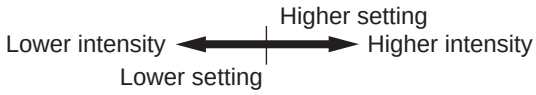


Figure 3-301 Construction of the Control System

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Related Service Mode

COPIER>ADJUST>LAMP>L-DATA (scanning lamp light intensity data input)	Use it to enter the setting recorded on the service label if the result of CCD-ADJ is NG, thereby determining FL-PWM. Settings: 0 to 255 

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B. Controlling the Temperature by a Fluorescent Lamp Heater

The fluorescent lamp controls the area around the fluorescent lamp to 70°C to ensure a stable light intensity.

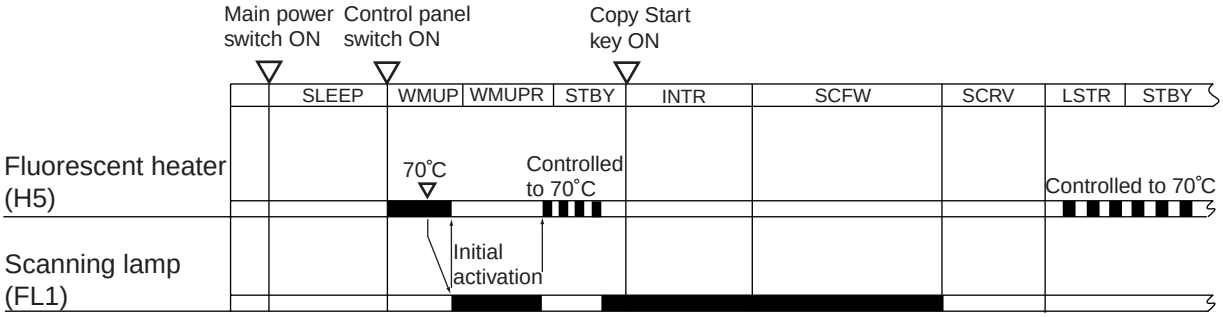


Figure 3-302 Heater-On Sequence

C. Controlling Pre-Heat Voltage

A pre-heat voltage is applied to the fluorescnet lamp even when the lamp remains off so as to ensure an optimum intensity in the shortest time possible.

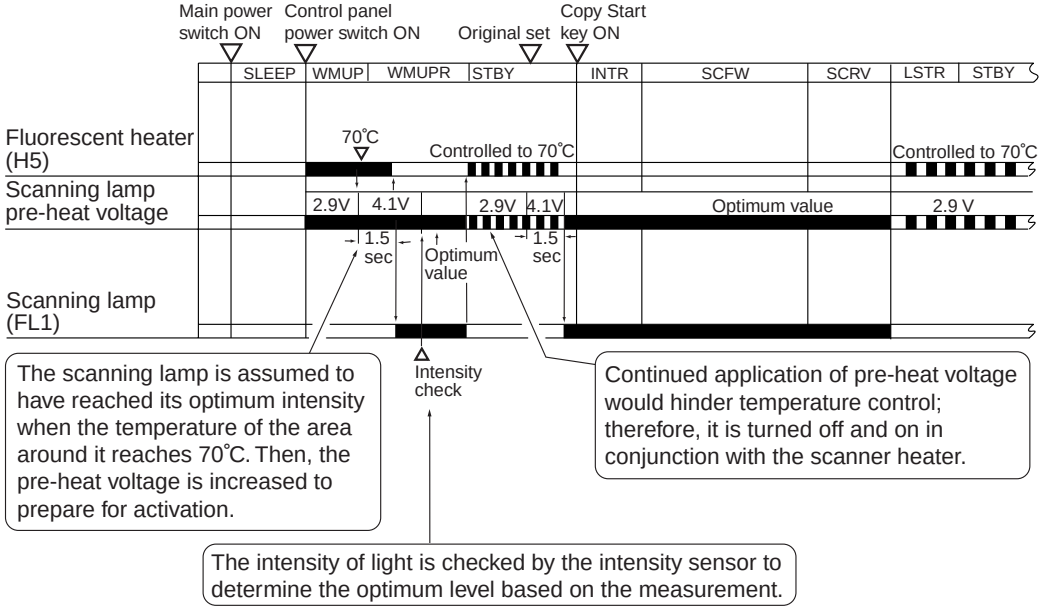

Main power switch ON
Control panel power switch ON
Original set
Copy Start key ON
SLEEP
WMUP
WMUPR
STBY
INTR
SCFW
SCRV
LSTR
STBY
Fluorescent heater (H5)
70˚C
Controlled to 70˚C
Controlled to 70˚C
Scanning lamp pre-heat voltage
2.9V
4.1V
2.9V
4.1V
Optimum value
2.9 V
1.5 sec
Optimum value
1.5 sec
Scanning lamp (FL1)
Intensity check
The scanning lamp is assumed to have reached its optimum intensity when the temperature of the area around it reaches 70˚C. Then, the pre-heat voltage is increased to prepare for activation.
Continued application of pre-heat voltage would hinder temperature control; therefore, it is turned off and on in conjunction with the scanner heater.
The intensity of light is checked by the intensity sensor to determine the optimum level based on the measurement.

Figure 3-303 Pre-Heat Voltage Application Sequence

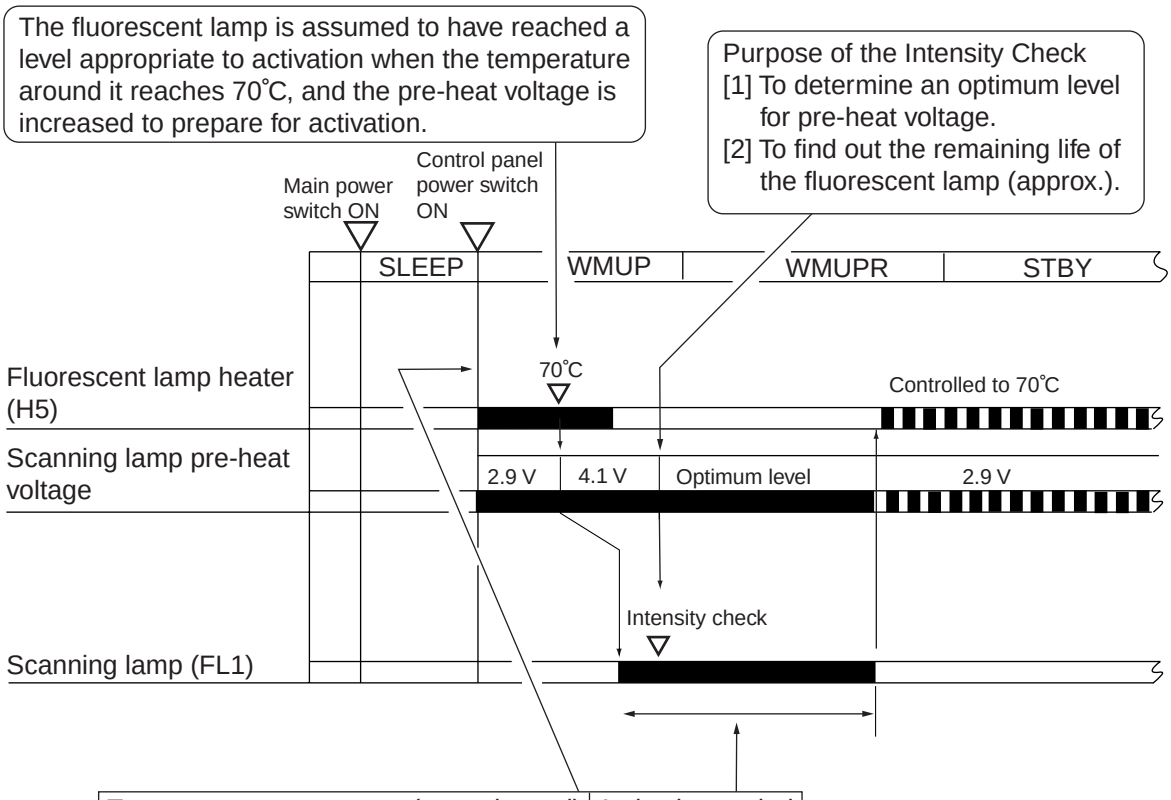
	Voltage	Description
Standby pre-heating	2.9 V	Used to stabilize the heat inside the fluorescent lamp while the lamp is off.
Pre-heating before activation	4.1 V	Applied 1.5 sec immediately before turning on the fluorescent lamp, thereby shortening the time until optimum intensity is attained.
Pre-heating during activation	3.9 V to 3.8 V (optimum level is applied to suit the measurement of the light intensity sensor)	To stabilize the inside of the fluorescent lamp during activation.

Table 3-301 Pre-Heat Voltage

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D. Initial Activation

The fluorescent lamp is turned on when the control panel power switch is turned on for the following:
[1] To stabilize the inside of the fluorescent lamp in the shortest time possible.
[2] To check the intensity by the light intensity sensor to determine pre-heat voltage.


The fluorescent lamp is assumed to have reached a level appropriate to activation when the temperature around it reaches 70˚C, and the pre-heat voltage is increased to prepare for activation.
Purpose of the Intensity Check
[1] To determine an optimum level for pre-heat voltage.
[2] To find out the remaining life of the fluorescent lamp (approx.).
Main power switch ON
Control panel power switch ON
SLEEP
WMUP
WMUPR
STBY
Fluorescent lamp heater (H5)
70˚C
Controlled to 70˚C
Scanning lamp pre-heat voltage
2.9 V
4.1 V
Optimum level
2.9 V
Intensity check
Scanning lamp (FL1)

Temperature at power-on (control panel)	Activation period
40˚C or less	30 sec
40˚C to 60˚C	20 sec
60˚C to 65˚C	5 sec
65˚C or more	Off

Figure 3-304 Sequence of Operations (initial activation)

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E. Detecting an Error

As part of controlling the fluorescent lamp, checks are made of the following:
[1] Remaining life of the fluorescent lamp (See Figure 3-305.)
[2] Activation error
[3] Thermistor error

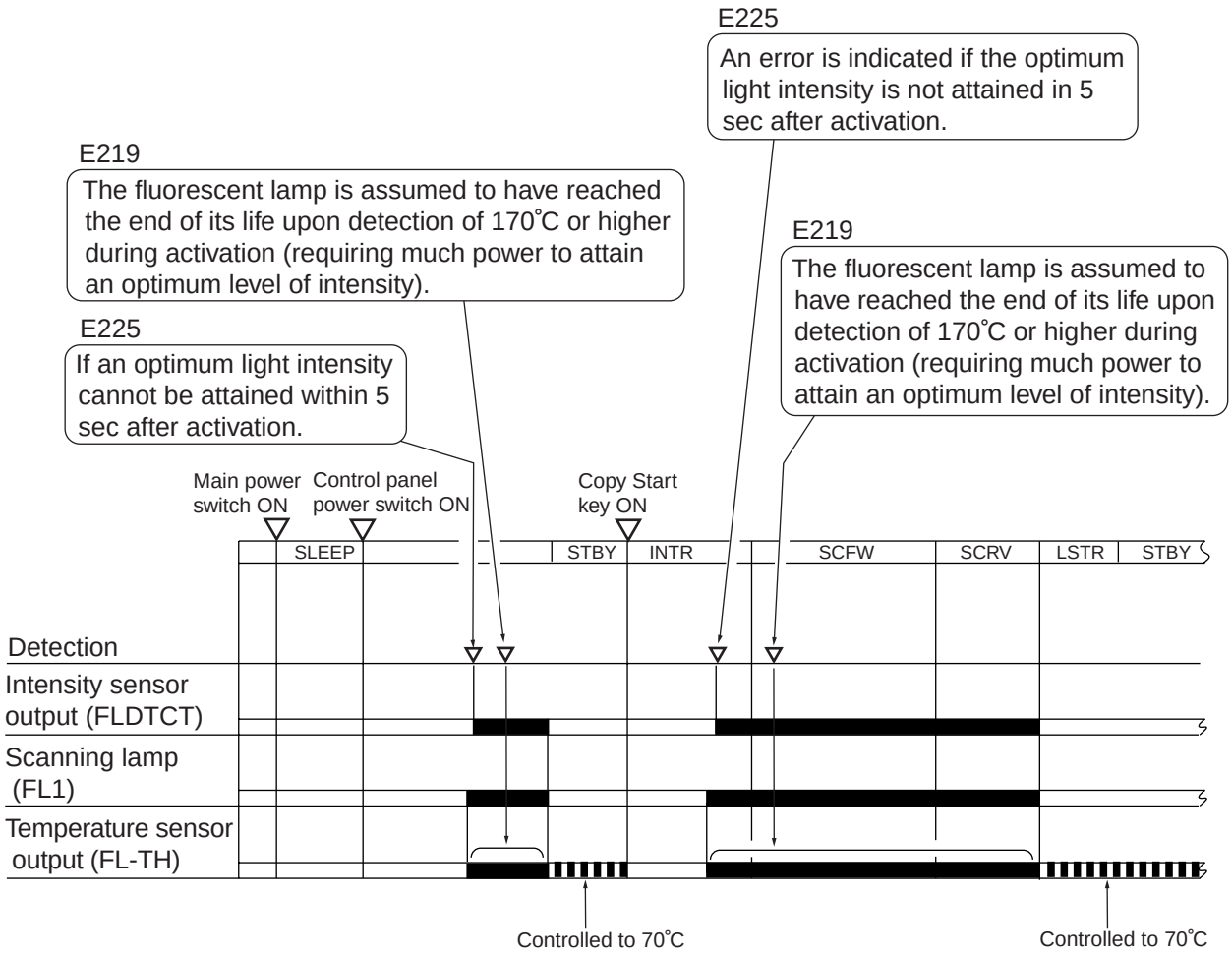

E225
An error is indicated if the optimum light intensity is not attained in 5 sec after activation.
E219
The fluorescent lamp is assumed to have reached the end of its life upon detection of 170˚C or higher during activation (requiring much power to attain an optimum level of intensity).
E219
The fluorescent lamp is assumed to have reached the end of its life upon detection of 170˚C or higher during activation (requiring much power to attain an optimum level of intensity).
E225
If an optimum light intensity cannot be attained within 5 sec after activation.
Main power switch ON
Control panel power switch ON
Copy Start key ON
SLEEP
STBY
INTR
SCFW
SCRV
LSTR
STBY
Detection
Intensity sensor output (FLDTCT)
Scanning lamp (FL1)
Temperature sensor output (FL-TH)
Controlled to 70˚C
Controlled to 70˚C

Figure 3-305 Checking the Remaining Life of the Fluorescent Lamp

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Related Error Code

E220 (activation error)	[1] While in standby, the scanning lamp turns on. (detected in reference to the voltage of FL-DTCT) [2] During scanning, the scanning lamp turns off. (detected in reference to the voltage of FL-DTCT)
E222 (fluorescent lamp heater error)	[1] When the main power switch is turned on, the temperature does not reach 70˚C or higher 5 min after the scanner heater has turned on (HEAT-ON=1). [2] While power is supplied, the temperature does not reach 75˚C or more 3 min after the fluorescent lamp heater has turned on.
E211 (thermistor open circuit)	[1] When the main power switch is turned on, the temperature does not reach 10˚C or higher 2 min after the fluorescent heater has turned on (HEAT-ON=1). [2] While power is supplied, a temperautre of 0˚C or lower is detected.
E215 (thermistor short circuit)	While the scanning lamp is off, a temperature of 170˚C or more is detected.
E219 (scanning lamp end of life)	While the scanning lamp is on, a temperature of 170˚C or higher is detected by the thermistor.

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IV . DETECTING THE ORIGINAL SIZE

A. Outline

📖 Volume 3>Chapter 3>I.F.>1. "Outline"

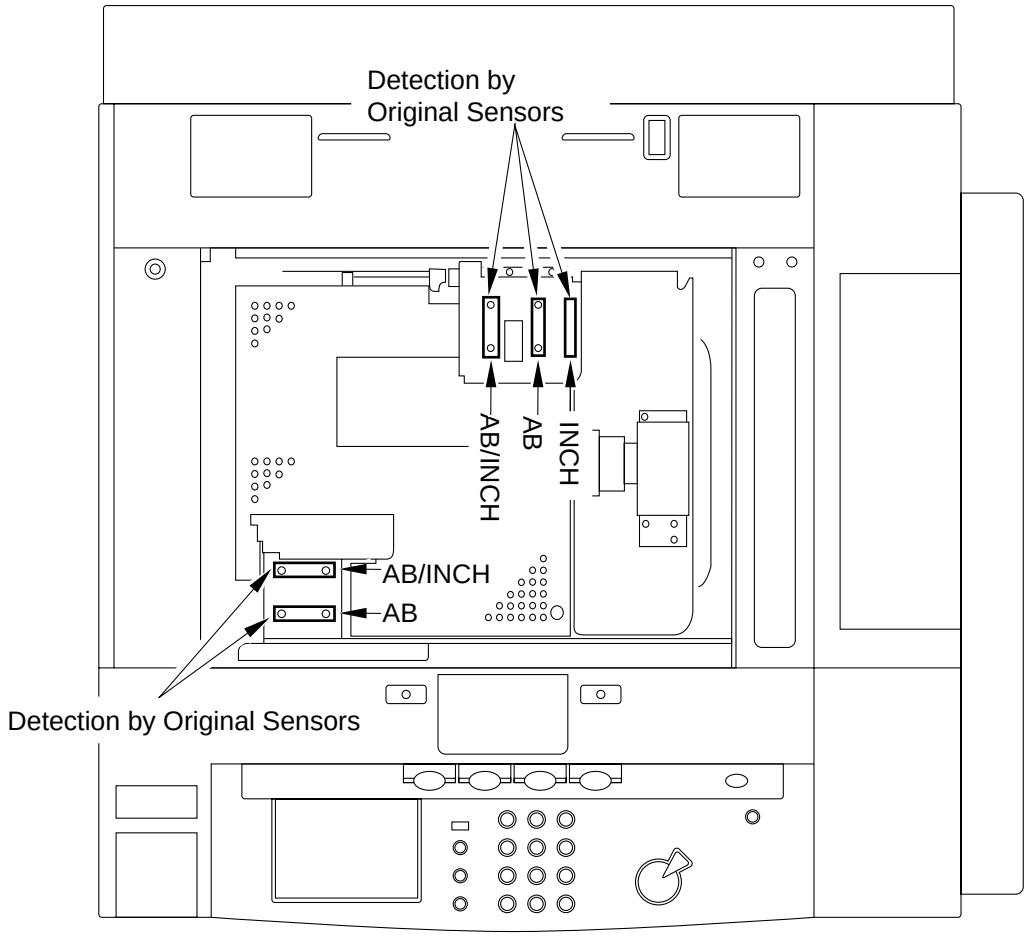


Figure 3-401 Arrangement of the Original Sensors

B. Detection by Original Sensors

📖 Volume 3>Chapter 3>I.F>2.>3. "Detecting the Original Size"

C. Detection by the Feeder

📖 Volume 3>Chapter 3>I.F.>4. "Detecting the Size of the Originals in the Feeder"

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V. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. No. 1 Mirror Mount

1. Removing the Scanning Lamp/ Scanning Lamp Heater

1) Remove the right glass retainer [2-1] and the left glass retainer [2-2]; then, detach the copyboard glass [3] and the scanning map cover [4].

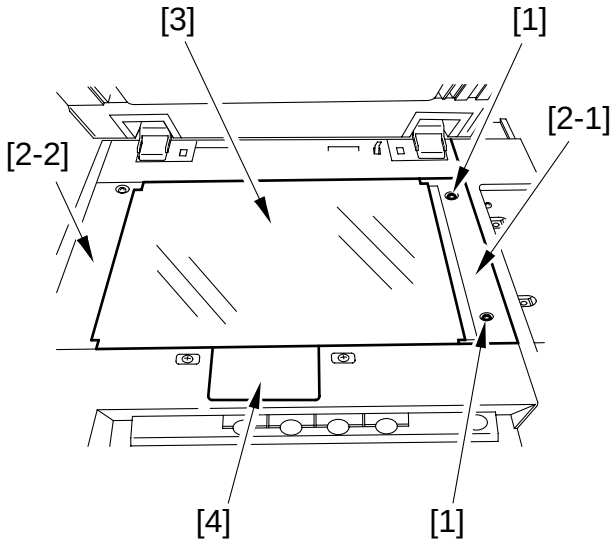


Figure 3-A501

2) Remove the four screws [5], and detach the scanning lamp inside cover [6].

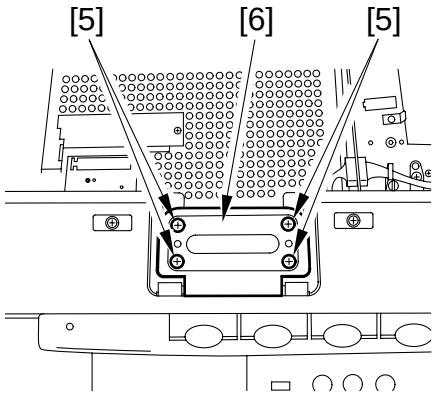


Figure 3-A502

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3) Move the No. 1 mirror mount [7] to where the scanning lamp inside cover has been removed; then, remove the two screws [8], and detach the anti-reflection plate [9].

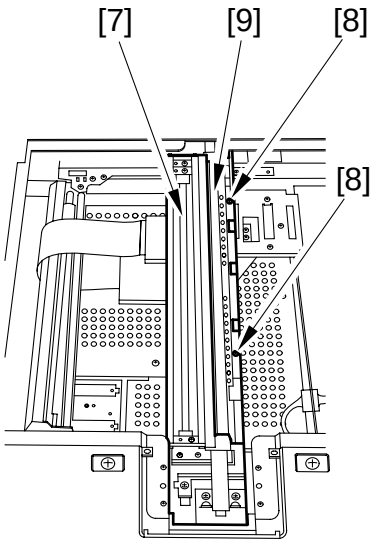


Figure 3-A503

Caution:
When mounting the anti-reflection plate, be sure to fit it in the cut-offs (front, rear) of the No. 1 mirror mount securely. Further, be sure to fit the connector in step 4) in the anti-refection plate.

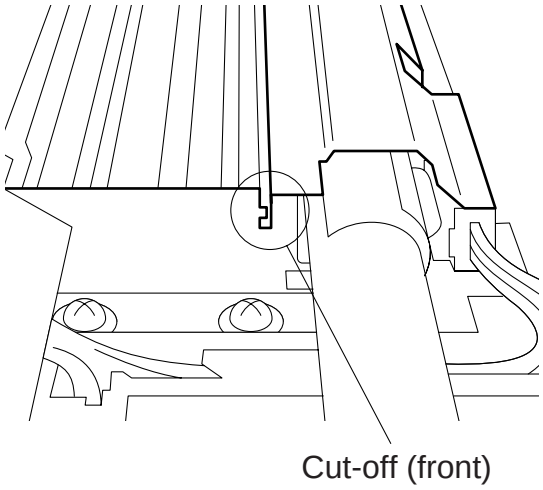


Figure 3-A504

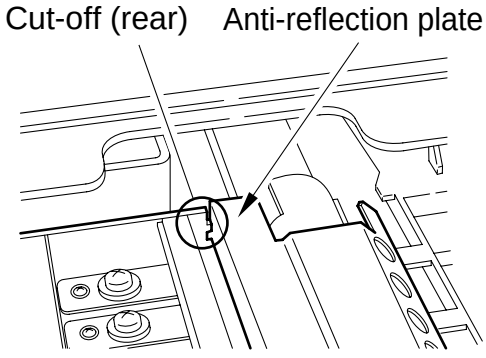


Figure 3-A505

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4) Disconnect the connector [10], and remove the two screws [11]; then, detach the scanning lamp [13] from the electrode plate (front) [12].

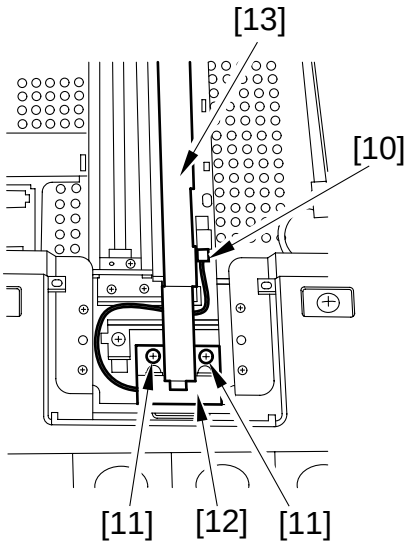


Figure 3-A506

5) Pull out the scanning lamp (w/ the scanning lamp heater) [13] by pulling it to the front.

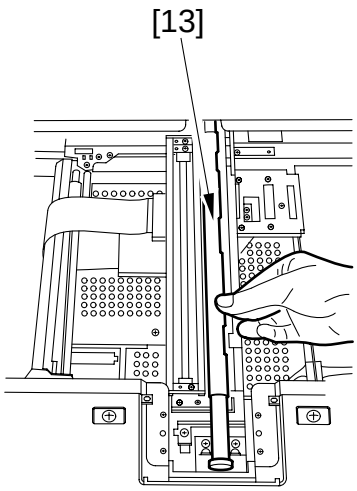


Figure 3-A507

6) Remove the scanning lamp heater [14] from the scanning lamp [13].

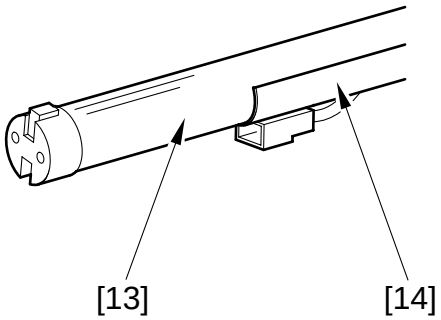


Figure 3-A508

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2. Points to Note When Replacing the Scanning Lamp

- Do not start working if the surface of the scanning lamp is hot.
- Do not leave fingerprints on the surface of the scanning lamp.
- Dry wipe the surface of the scanning lamp if soiled.
- When mounting the scanning lamp heater to the scanning lamp, be sure to match the markings. (The connector of the scanning lamp heater must be toward the front of the copier.)
- When mounting the scanning lamp to the copier, take care not to touch its light-emitting side.
- When mounting the scanning lamp to the copier, be sure that the print/marking is toward the upper front of the copier.

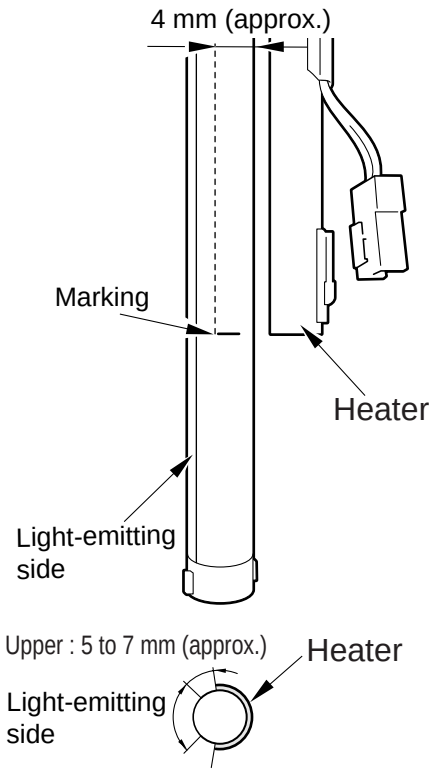


Figure 3-A509

3. After Replacing the Scanning Lamp

1) Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
2) When all items of COPIER>ADJUST>CCD and data of COPIER>ADJUST>LAMP>L-DATA have been updated, record them on the service label.

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B. Scanner Drive Assembly

1. Removing the Scanner Motor

1) Open the toner cartridge cover.
2) Remove the upper right cover.
3) Remove the rear cover.
4) Remove the four screws [1], and disconnect the connector [2].

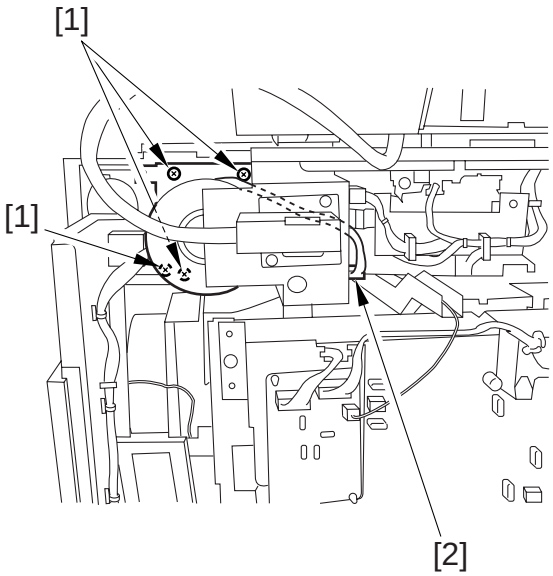


Figure 3-B501

5) While pulling the scanner motor unit [3] toward the front, detach the belt to detach the motor.

Adjustment:

When the position of the scanner motor must be adjusted while mounting it, adjust the tension of the belt to 13±2N (1.3±0.2 kgf) using a spring gauge.

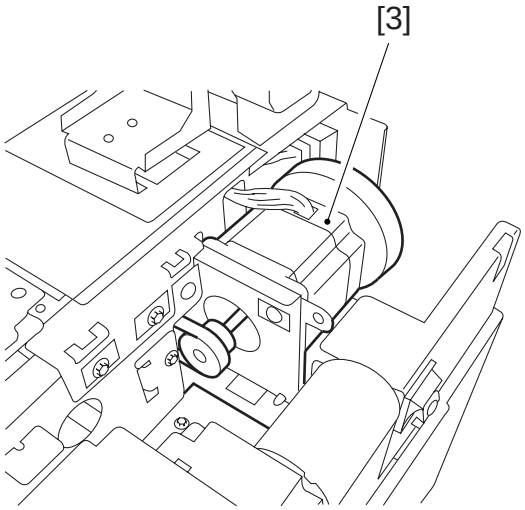


Figure 3-B502

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2. Scanner Drive Cable

a. Adjusting the Tension of the Scanner Drive Cable

Before starting the work, obtain the mirror positioning tool (FY9-3040-000).

1) Remove the ADF.
2) Remove the right glass retainer.
3) Remove the copyboard glass.
4) Open the front cover, and remove the upper inside cover and the inside cover (AP kit).
5) Remove the control panel.
6) Remove the rear cover.
7) Remove the four screws [1], and detach the right reinforcing stay [2].
8) Remove the inverter PCB unit.
9) Move the No. 1 mirror mount until its cable metal fixing [3] is visible through the hole in the copier's side plate.

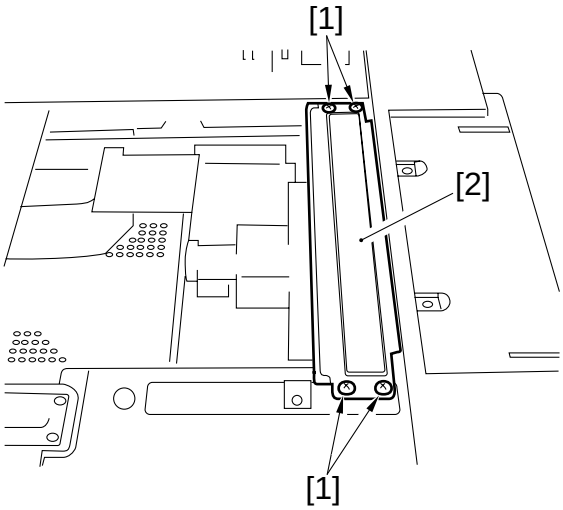


Figure 3-B503

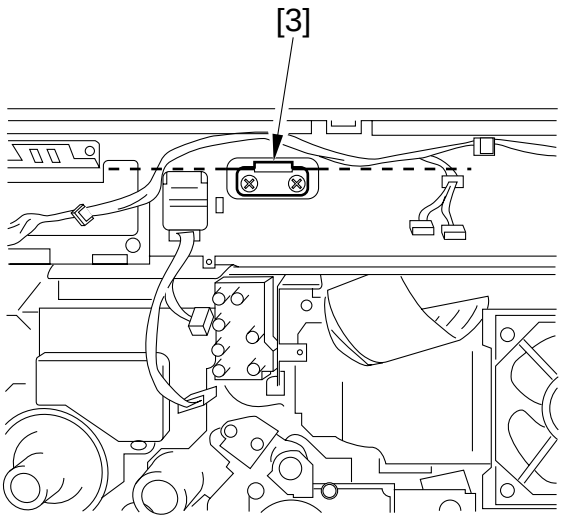


Figure 3-B504

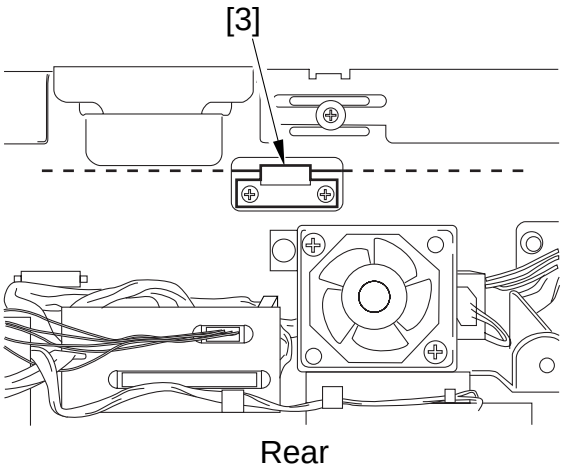


Figure 3-B505

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10) Rout the scanner cable through the pulley and hooks as shown in Figure 3-B506.

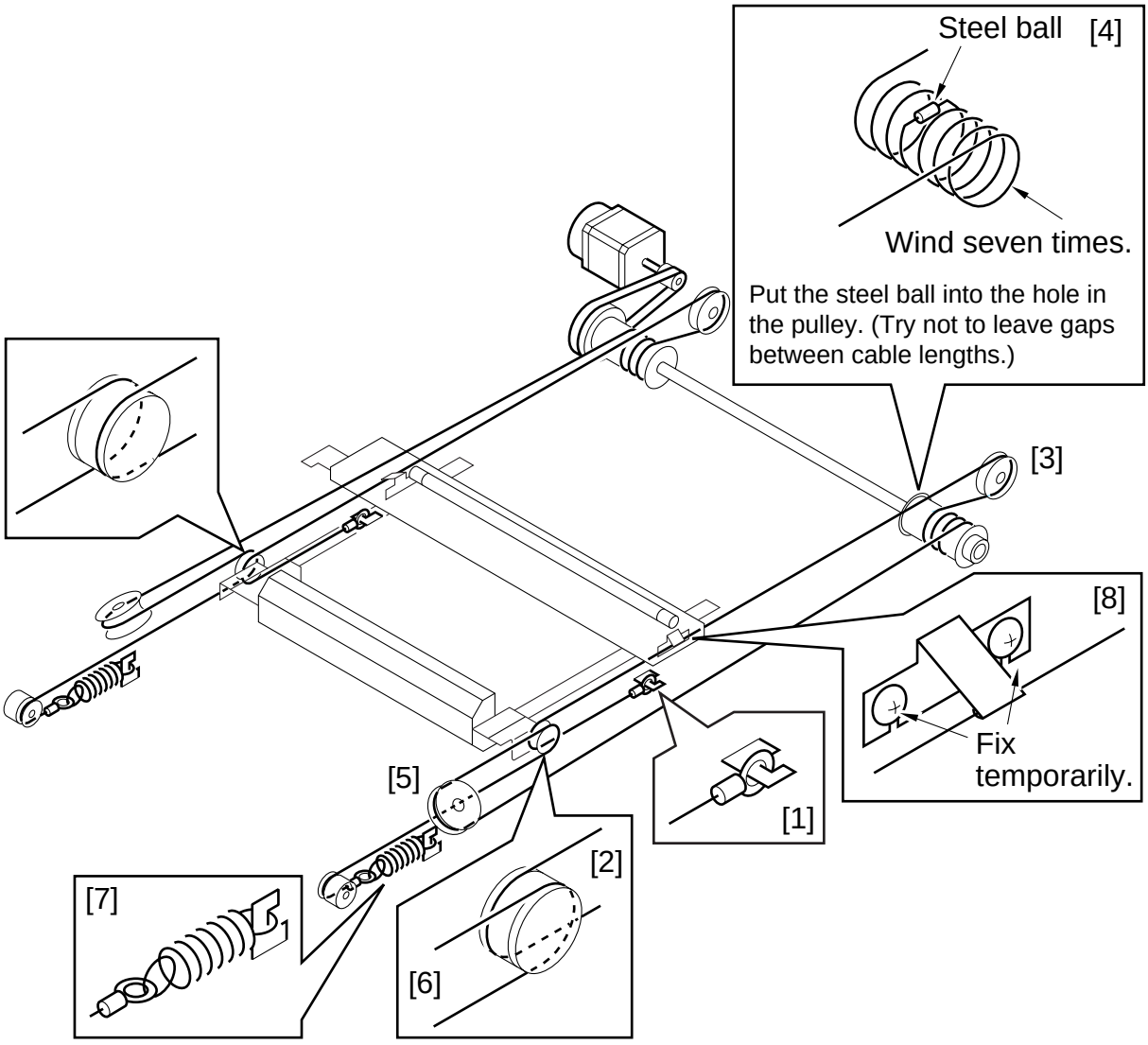


Figure 3-B506

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11) Fit the mirror positioning tool [4] between the No. 1 mirror mount and the No. 2 mirror mount; then, insert the pin [5] that comes with the mirror positioning tool.

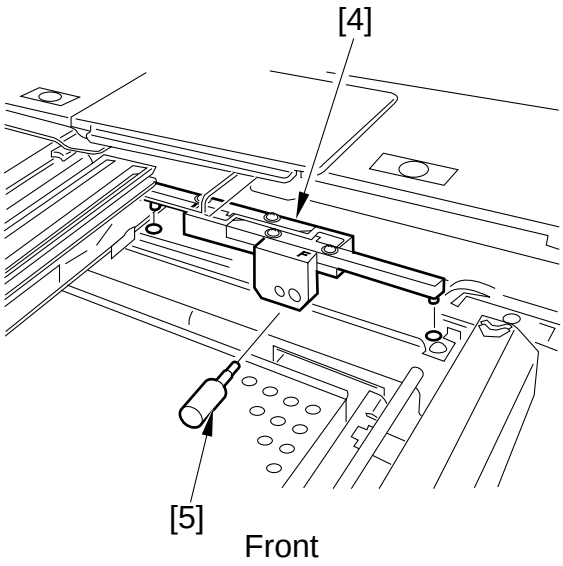


Figure 3-B507

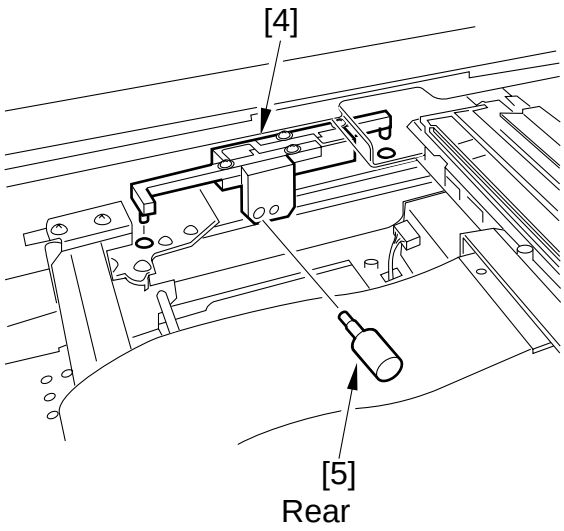


Figure 3-B508

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12) Secure the cable metal fixing [3] temporarily fixed in place in [8] of step 10) using two screws [6] through the hole in the side plate.

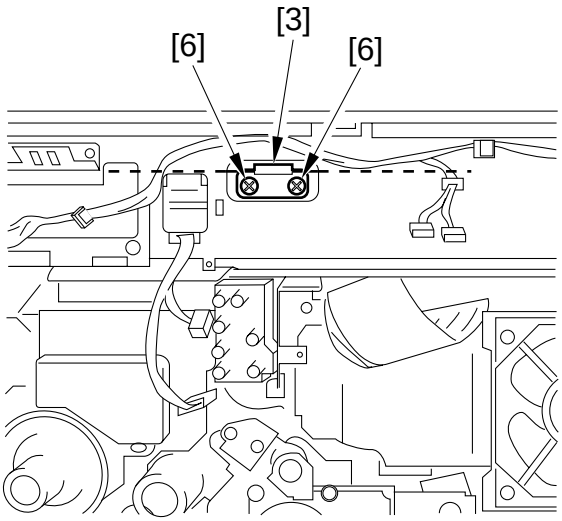


Figure 3-B509

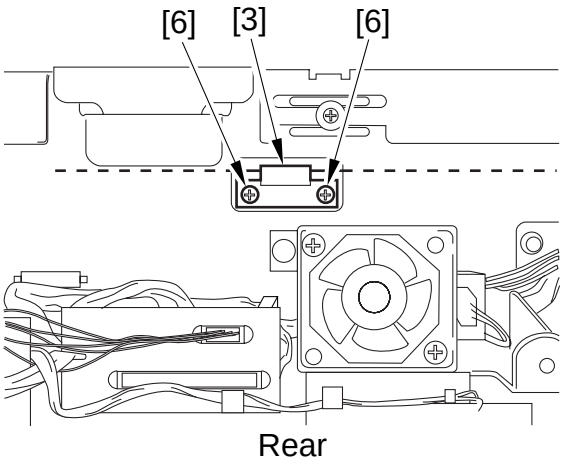


Figure 3-B510

13) Detach the mirror positioning tool.
14) Mount the parts back by performing steps 1) through 8) in reverse.

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b. Removing the No. 1 Mirror Mount Flexible Cable

Caution:
Do not disconnect the connector (connected to the No. 1 mirror mount) of the flexible cable unless you are replacing the No. 1 mirror mount. (Do not disconnect the cable when cleaning the mirror.)

1) Remove the two screws [1], and detach the right glass retaining cover [2].

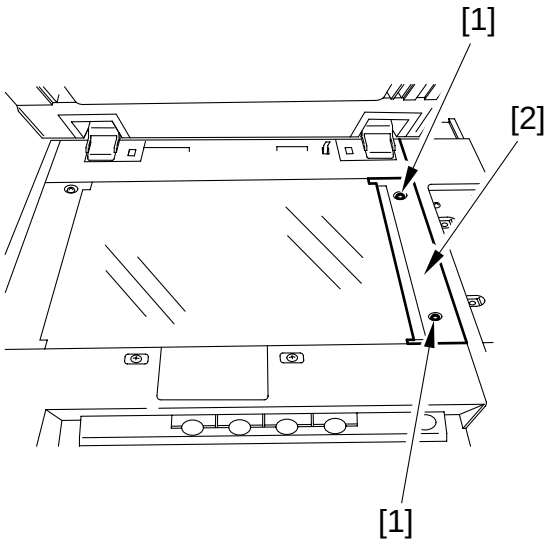


Figure 3-B511

2) Remove the copyboard glass.
3) Move the No. 1 mirror mount to the center.

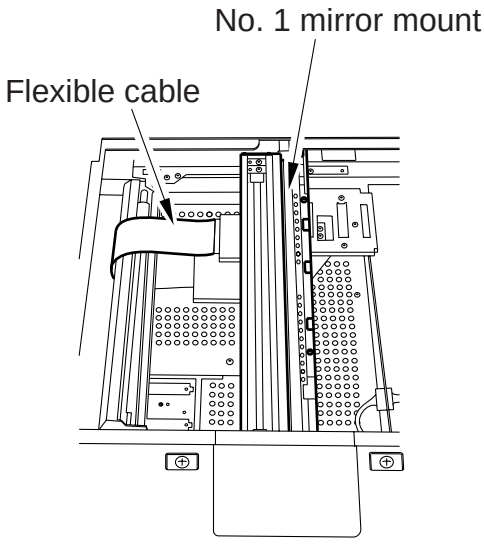


Figure 3-B512

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4) Peel off the warning label from the flexible cable.

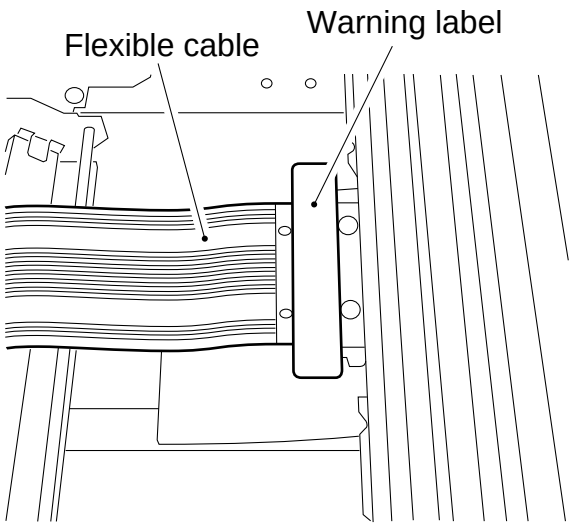


Figure 3-B513

5) Push in the claw to release the flexible cable fixing plate.

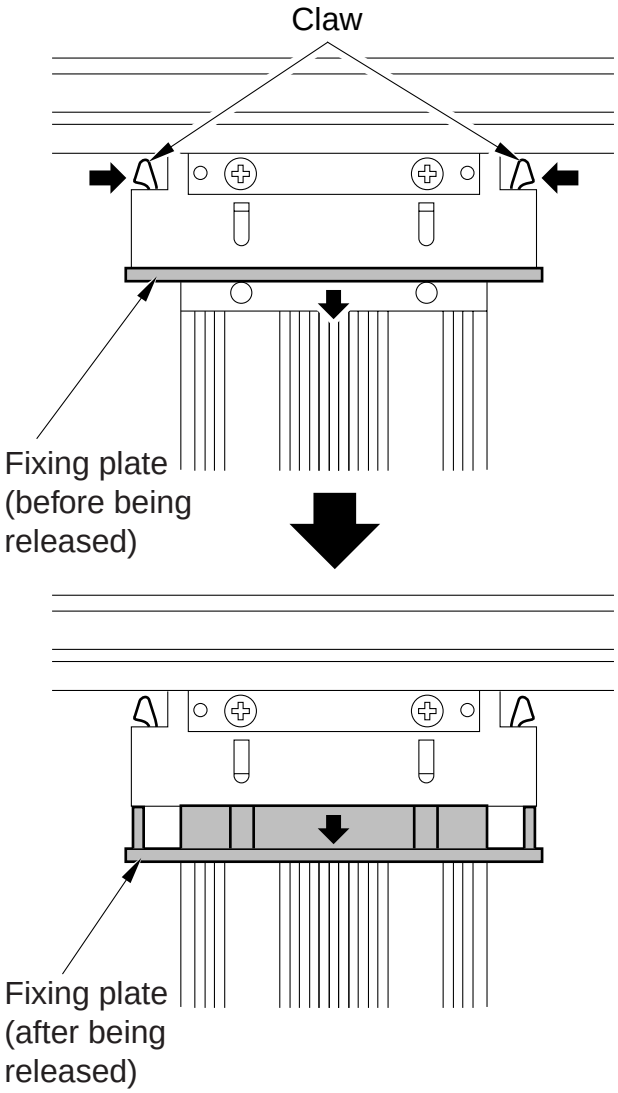


Figure 3-B514

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6) While pushing the boss (2 pc.) with a small screwdriver, disconnect the flexible cable carefully from the connector.

Caution:

- When mounting, be sure to butt the flexible cable fully against the rear, and push in the fixing plate while holding it level.
- When pushing in the fixing plate, do not touch the reflecting plate.

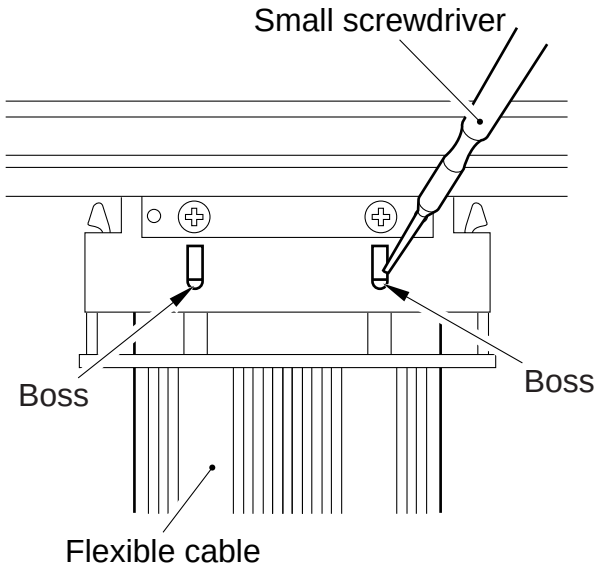


Figure 3-B515

C. PCBs

1. Removing the Light Intensity Control PCB

1) Remove the right glass retainer.
2) Remove the copyboard glass.
3) Remove the screw [1] from the No. 1 mirror mount; then, while pushing down the three claws, free the intensity control PCB holder.

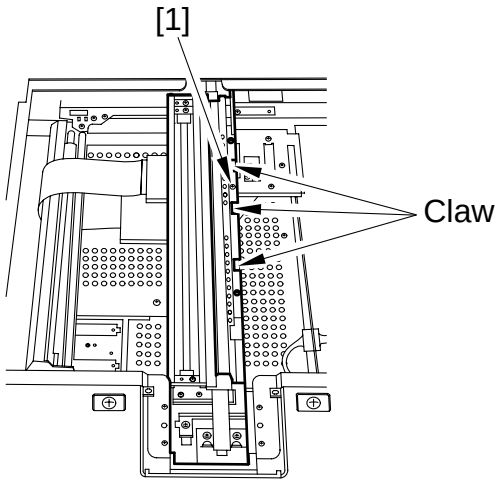


Figure 3-C501

4) Disconnect the connector [2] (J165), and remove the screw [3]; then, detach the light intensity control PCB [4].

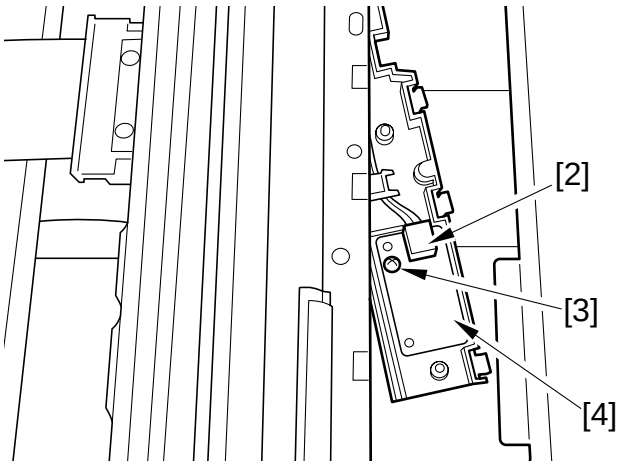


Figure 3-C502

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2. Removing the Inverter PCB

1) Remove the rear cover.
2) Remove the two screws [1], and disconnect the seven connectors [2]. While removing the hook of the mounting plate upward, remove the inverter control assembly [3].

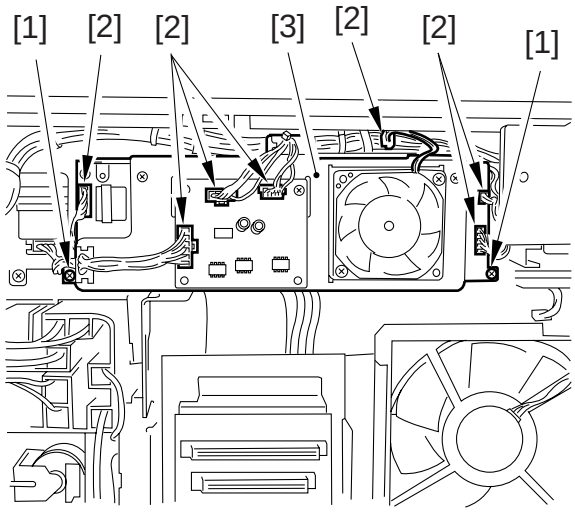
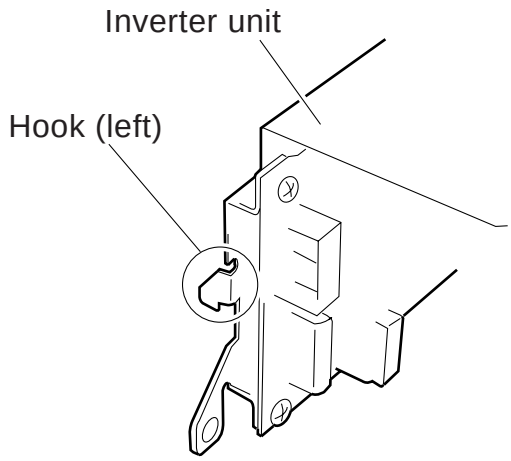


Figure 3-C503



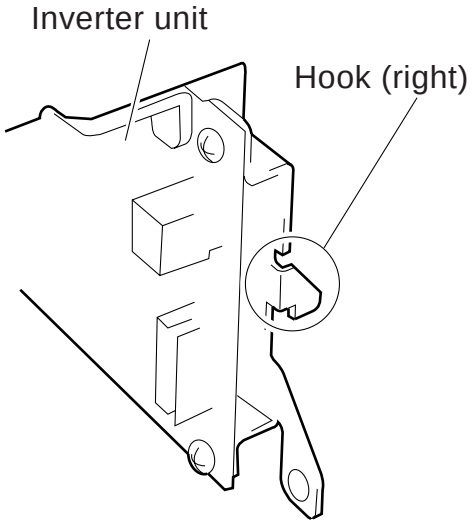


Figure 3-C504

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3) Remove the six screws [4], and detach the inverter PCB [5].

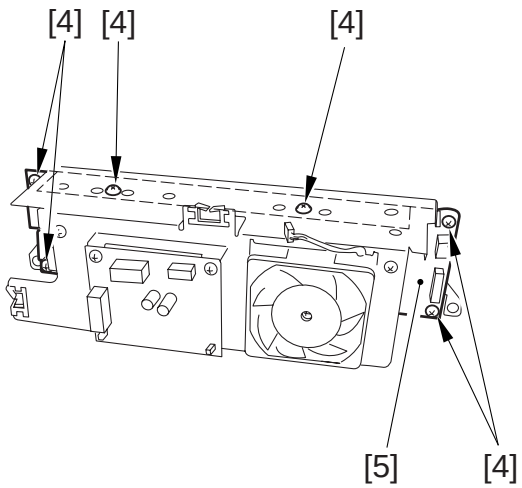


Figure 3-C505

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D. Others

1. Removing the Original Size Sensor (1/2)

1) Remove the copyboard glass.
2) Move the No. 1 mirror mount to the right end.
3) Remove the two screws [1], and disconnect the connector [2]; then, detach the original sensor unit [3].

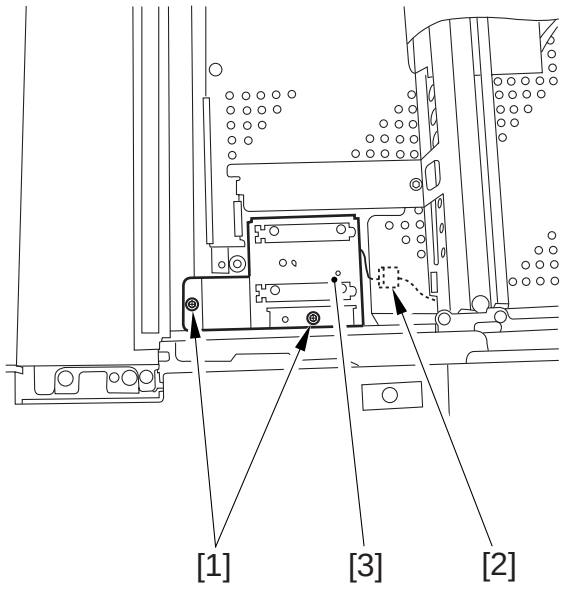


Figure 3-D501

4) Disconnect the connector [4] (one each), and detach the original sensor (1/2) [5].

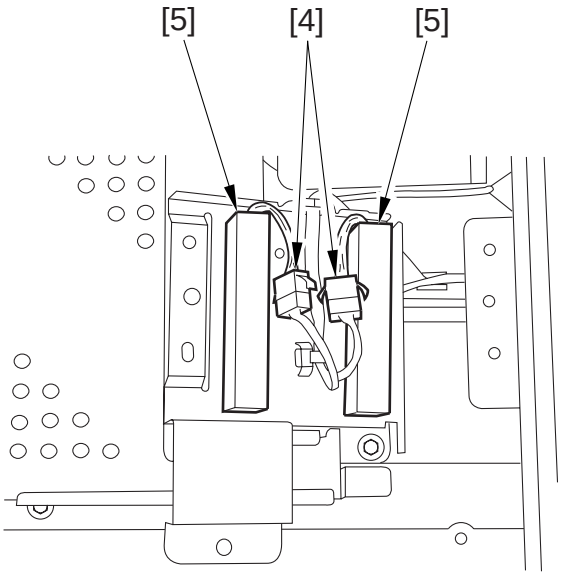


Figure 3-D502

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2. Removing the Original Size Sensor (3/4)

1) Remove the copyboard glass.
2) Remove the two screws [1], and disconnect the connector [2]; then, detach the original sensor unit [3].

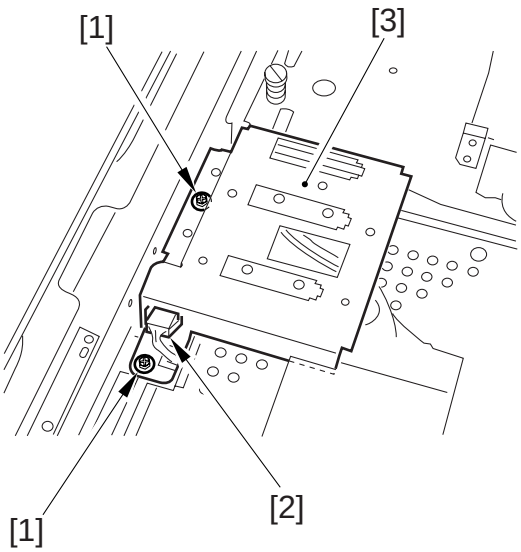


Figure 3-D503

3) Disconnect the connector [4] (one each), and detach the original sensor (3/4) [5].

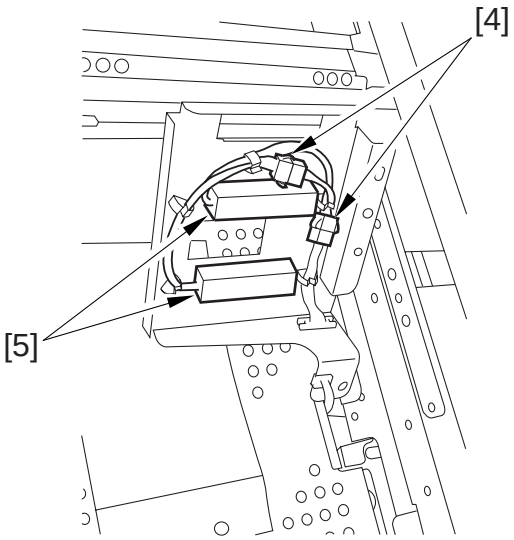


Figure 3-D504

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3. Removing the Scanner Home Position Sensor

1) Remove the rear cover.
2) Free the harness from the wire saddle [1], and disconnect the connector [2]; then, remove the screw [3], and detach the sensor mount [4].

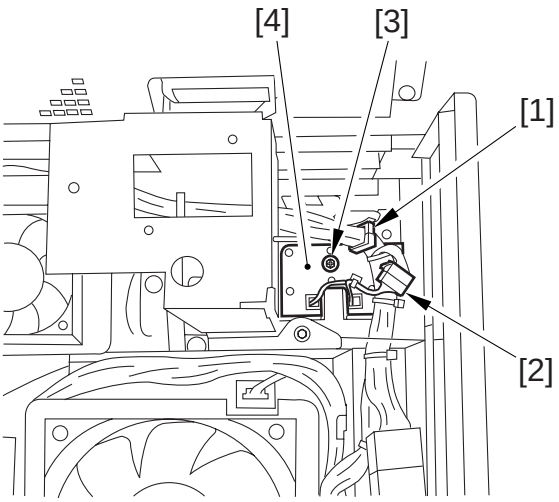


Figure 3-D505

3) Disconnect the connector [5], and remove the screw [6]; then, detach the scanner home position sensor [7].

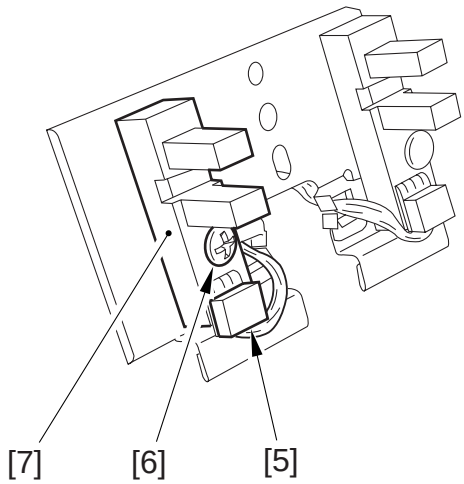


Figure 3-D506

4. Removing the Copyboard Glass

1) Remove the rear cover.
2) Free the harness from the wire saddle [1], and remove the screw [2]; then, detach the sensor mount [3].

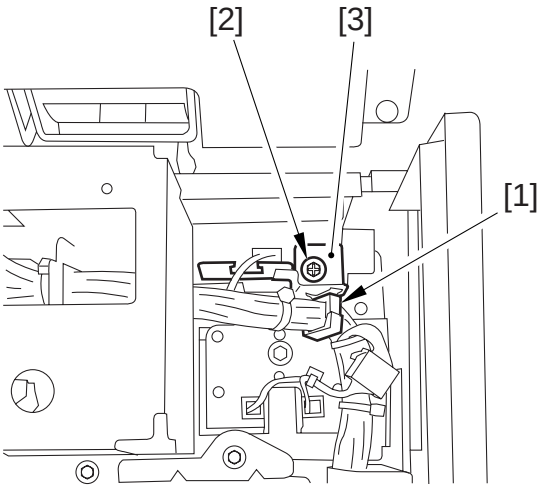


Figure 3-D507

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3) Disconnect the connector [4], and detach the copyboard glass sensor [5].

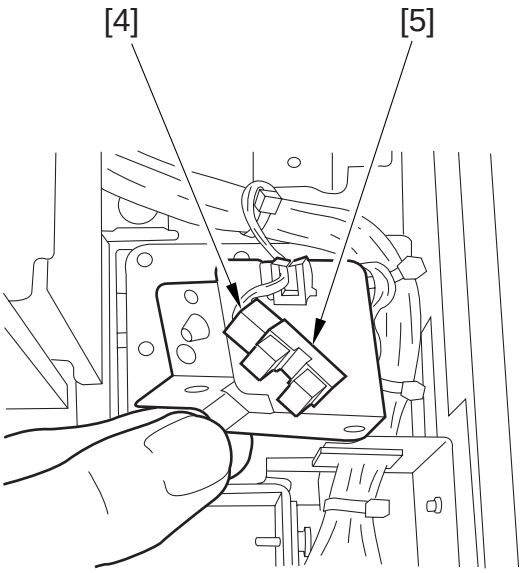


Figure 3-D508

5. Removing the Image Leading Edge Sensor

1) Remove the rear cover.
2) Free the harness from the wire saddle [1], and disconnect the connector [2]; then, remove the screw [3], and detach the sensor mount [4].

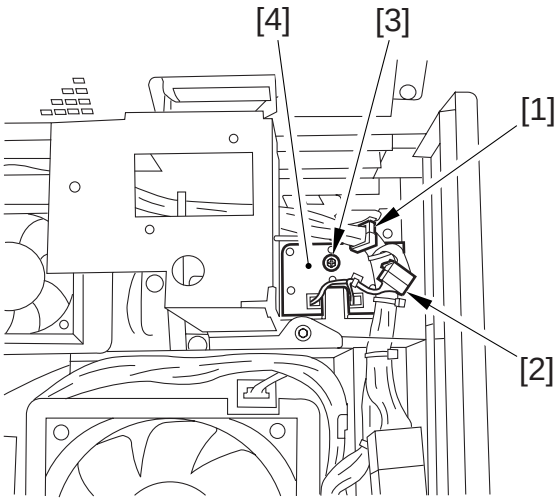


Figure 3-D509

3) Disconnect the connector [5], and remove the screw [6]; then, detach the image leading edge sensor [7].

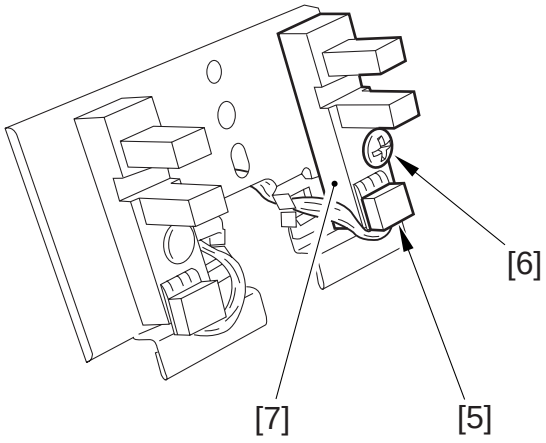


Figure 3-D510

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6. Removing the Standard White Plate

1) Remove the right glass retaining cover.
2) Remove the copyboard glass.
3) Remove the small cover [1] for the standard white plate with a flat-blade screwdriver.

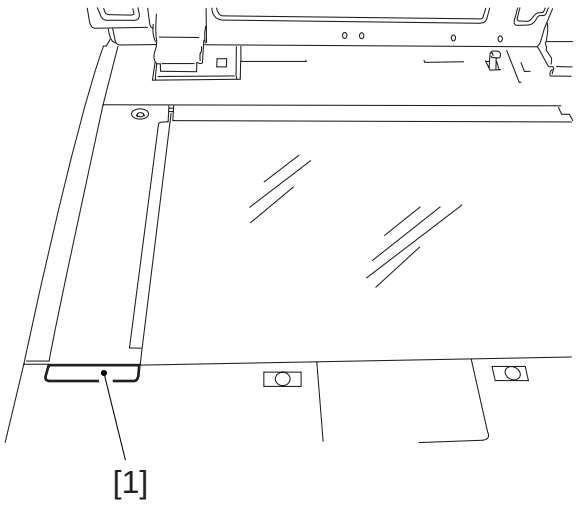


Figure 3-D511

4) Remove the two screws [2], and detach the standard white cover [3].

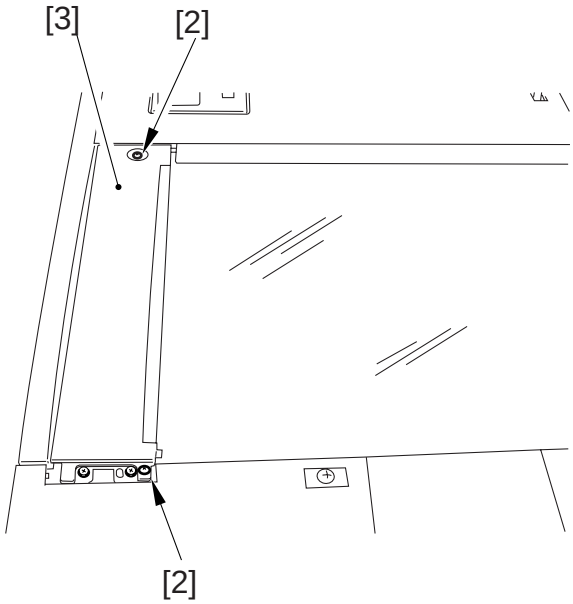


Figure 3-D512

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5) Remove the four screws [4], and detach the standard white plate [5].

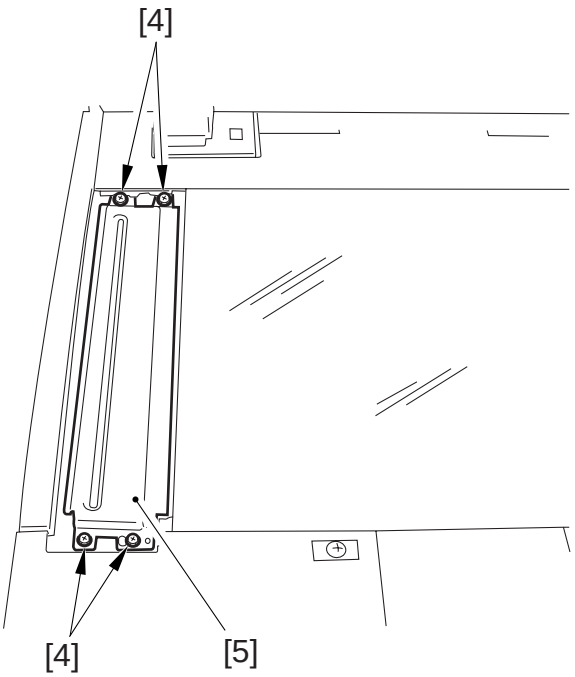


Figure 3-D513

7. After Replacing the Standard White Plate

1) Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
2) When all items under COPIER>ADJUST>CCD and data under COPIER>ADJUST>LAMP>L-DATA have been updated, record the results on the service label.

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CHAPTER 4

IMAGE PROCESSING SYSTEM

This chapter provides descriptions on the copier's image processing operations, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

I. OUTLINE 4-1
II. ANALOG IMAGE PROCESSING 4-4
  A. Outline 4-4
III. DIGITAL IMAGE PROCESSING 4-6
  A. Outline 4-6
  B. Image Procesing Functional Block 4-7
  C. Shading Correction 4-9
  D. Line Conversion 4-10
  E. Editing 4-11
  F. Density Processing 4-12
  G. Binary Processing 4-15
  H. Image Memory 4-17
  I. Detecting the Orientation of Originals 4-19
  J. Black Pixel Count 4-20
IV. DISASSEMBLY/ASSEMBLY 4-21
  A. CCD PCB 4-22
  B. Image Processor PCB 4-24
  C. Hard Disk (image server) 4-26
  D. Others 4-27

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I . OUTLINE

Table 4-101 shows the major functions of the image processing system.

Item	Description
CCD	Number of CCD lines: 1 Number of pixels: 7500 Size of a CCD pixel: 7 × 7 µm
AE	[1] Priority on speed by ABC processing [2] Priority on image quality by pre-scanning
Shading correction	[1] Shading adjustment in service mode [2] Shading correction executed for each copy
Binary processing	[1] Text/photo mode, text mode by random error diffusion (R-ED) method [2] Print photo mode by screen dither processing
Memory size	[1] Page Memory (DRAM) 18 MB (equivalent of 4 A4 originals; not compressed) [2] Image server (hard disk) 2 GB (equivalent of 1,920 A4 originals; compressed)
Others	[1] Original orientation detection [2] Black pixel count

Table 4-101 Major Functions

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Figure 4-101 shows the functional construction of the image processing system.

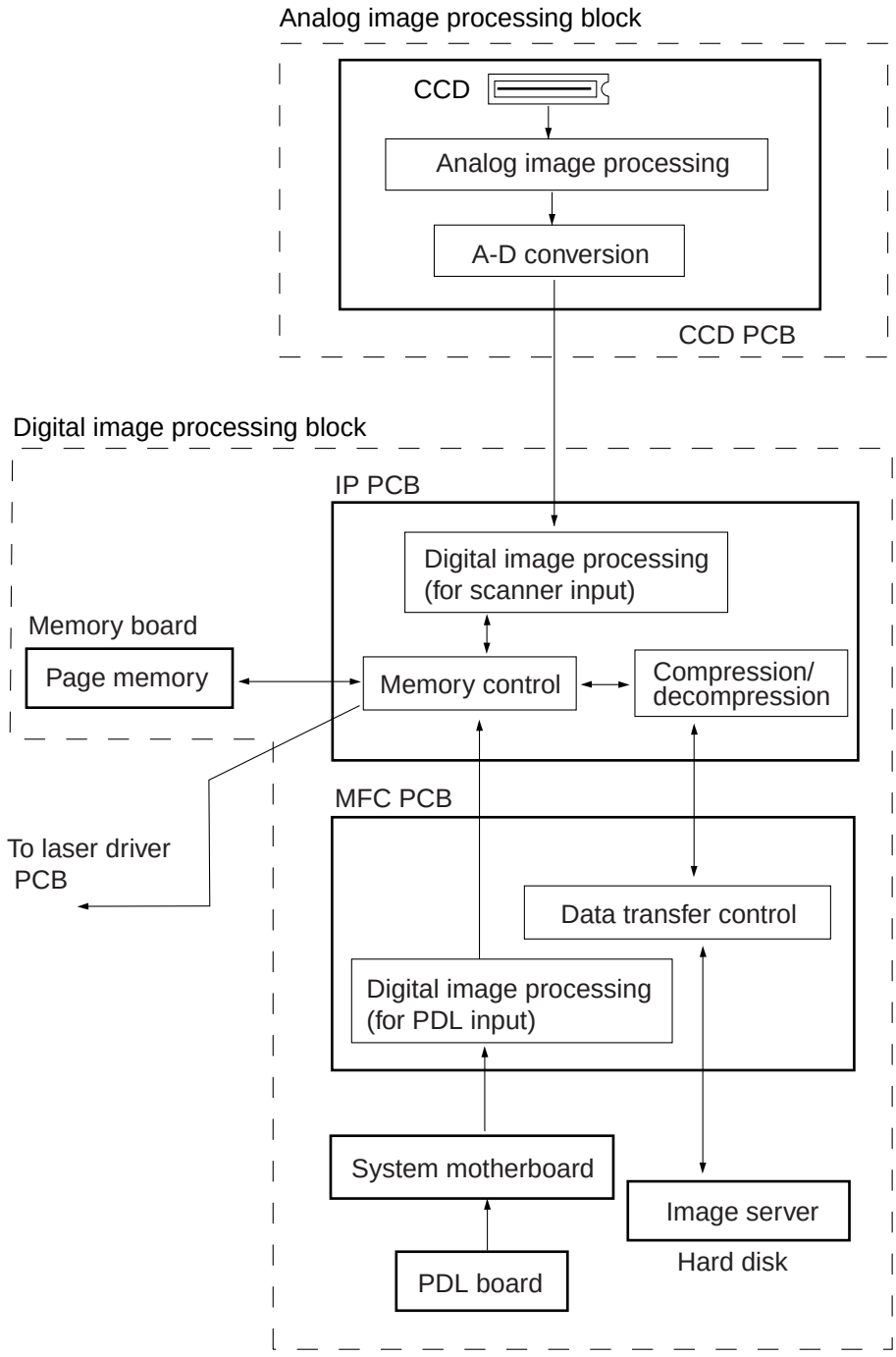


Figure 4-101 Functional Construction

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Table 4-102 shows the functions of each PCB used in the image processing system.

PCB	Description
CCD PCB	[1] CCD driver [2] Analog image processing [3] A/D conversion
IP (image processor) PCB	Digital processing (for scanner input)
MFC (multi-function controller) PCB	Digital image processing (PDL input)
System motherboard	Relays image signals.
PDL board	Converts PDL data into a format that can be processed by the copier.
Memory board (DRAM)	Page memory of last images
Image server (hard disk)	Stores image data that has been read in sequence.

The functions of each PCB given in the above table are limited to those relating to image processing.

Table 4-102 Functions of PCBs

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II . ANALOG IMAGE PROCESSING

A. Outline

Analog image processing takes place on the CCD PCB, which possesses the following functions:

1. CCD drive 🕮 Volume 3>Chapter 4>II.B. "CCD"
2. CCD output offset correction 🕮 Volume 4>Chapter 4>III. "Analog Image Processing"
3. CCD output gain correction 🕮 Volume 4>Chapter 4>III. "Analog Image Processing"
4. CCD output A/D conversion 🕮 Volume 3>Chapter 4>III.D. "A/D Conversion"
5. Real-time AE processing (ABC processing) 🕮 Volume 3>Chapter 4>III.E. "ABC Circuit"

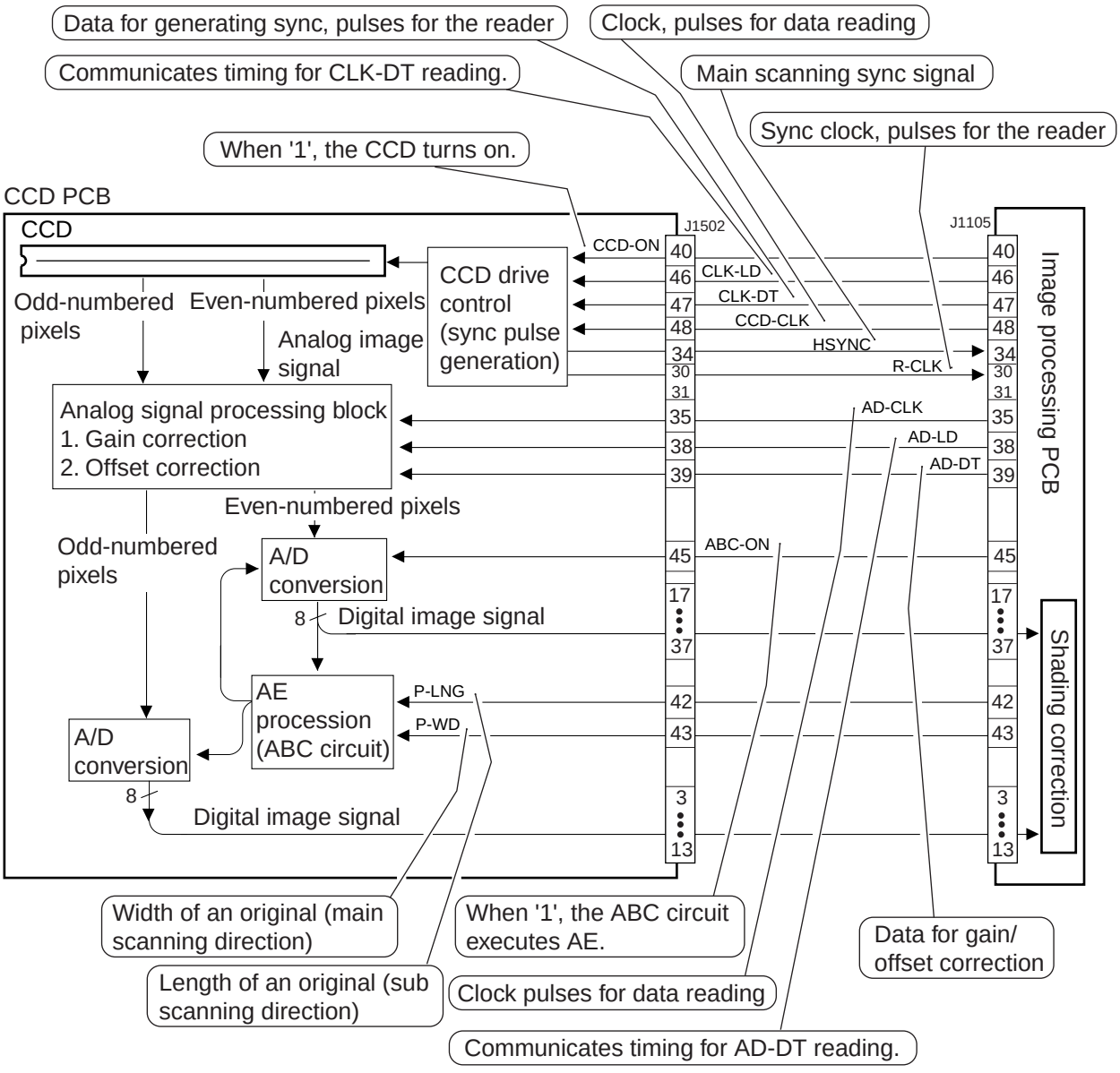
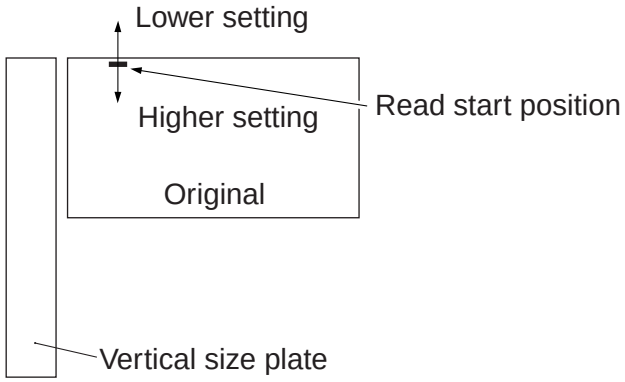
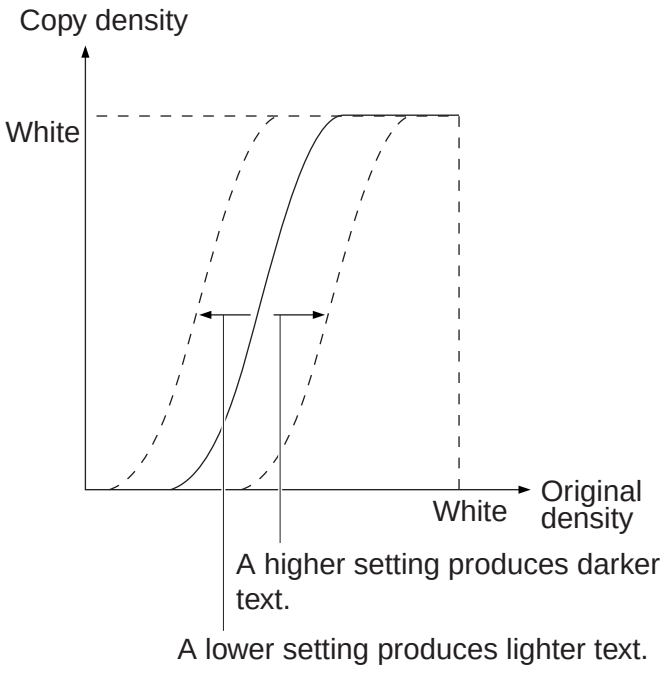


Figure 4-201 Functional Block Diagram

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Related Service Mode

COPIER>ADJUST>ADJ-XY>ADJ-Y (CCD read start position adjustment)	Enter a value to adjust the read start position.  Setting range: 0 to 400 (a change of 12 causes a shift of 1 mm)
COPIER>ADJUST>AE>AE-TBL (real-time AE mode text density adjustment)	Enter a value to adjust the density correction curve for real-time AE mode (in 10 steps). Setting range: 0 to 9 (default at 4) 

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III . DIGITAL IMAGE PROCESSING

A. Outline

Digital image processing takes place on the following PCBs:

PCB	Description
IP (image processor) PCB	[1] Digital Image Processing (for scanner input) • Shading correction • Enlargement/reduction (main scanning direction) • Edge emphasis • Binary processing • AE processing (density correction curve) • Negative/positive reversal • Frame erasing • Rotation • Smoothing [2] Compression/decompression [3] Data transfer control
MFC (multi-function controller) PCB	[1] Digital Image Processing (for PDL input) • Enlargement/reduction (main/sub scanning direction) [2] Data transfer control
System motherboard	Relays image signals.
PDL board	Converts PDL data into a format that can be processed by the copier.
Memory board (DRAM)	Page Memory: 18 MB (equivalent of 4 A4 originals; not compressed)
Image server (hard disk)	Stores image data that has been read in sequence. 2 GB (1,920 A4 originals; compressed)

Table 4-301 Related PCBs

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B. Image Processing Functional Block

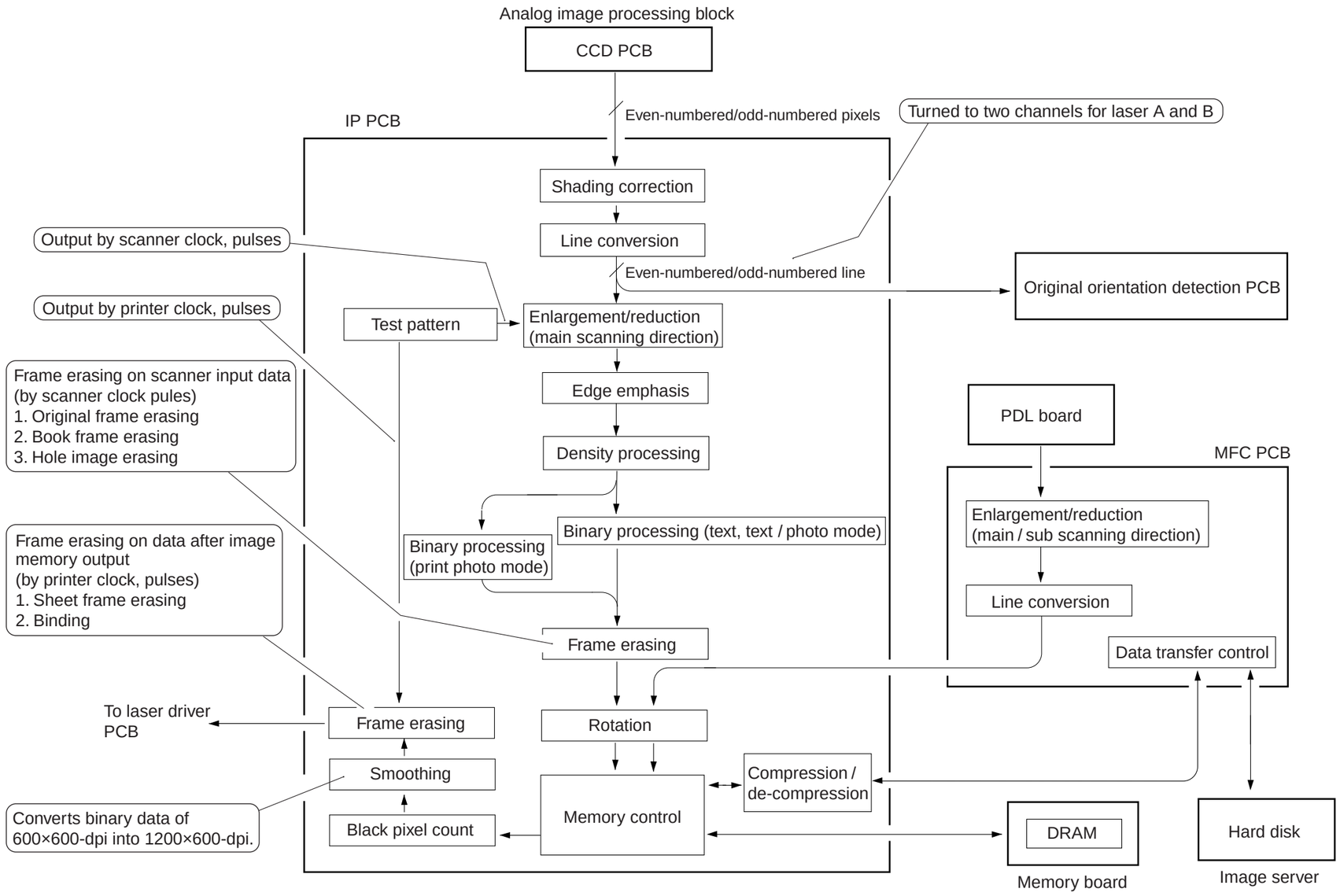


Figure 4-301 Functional Block Diagram

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C. Shading Correction

Volume 3>Chapter 4>IV.B. "Shading Correction"

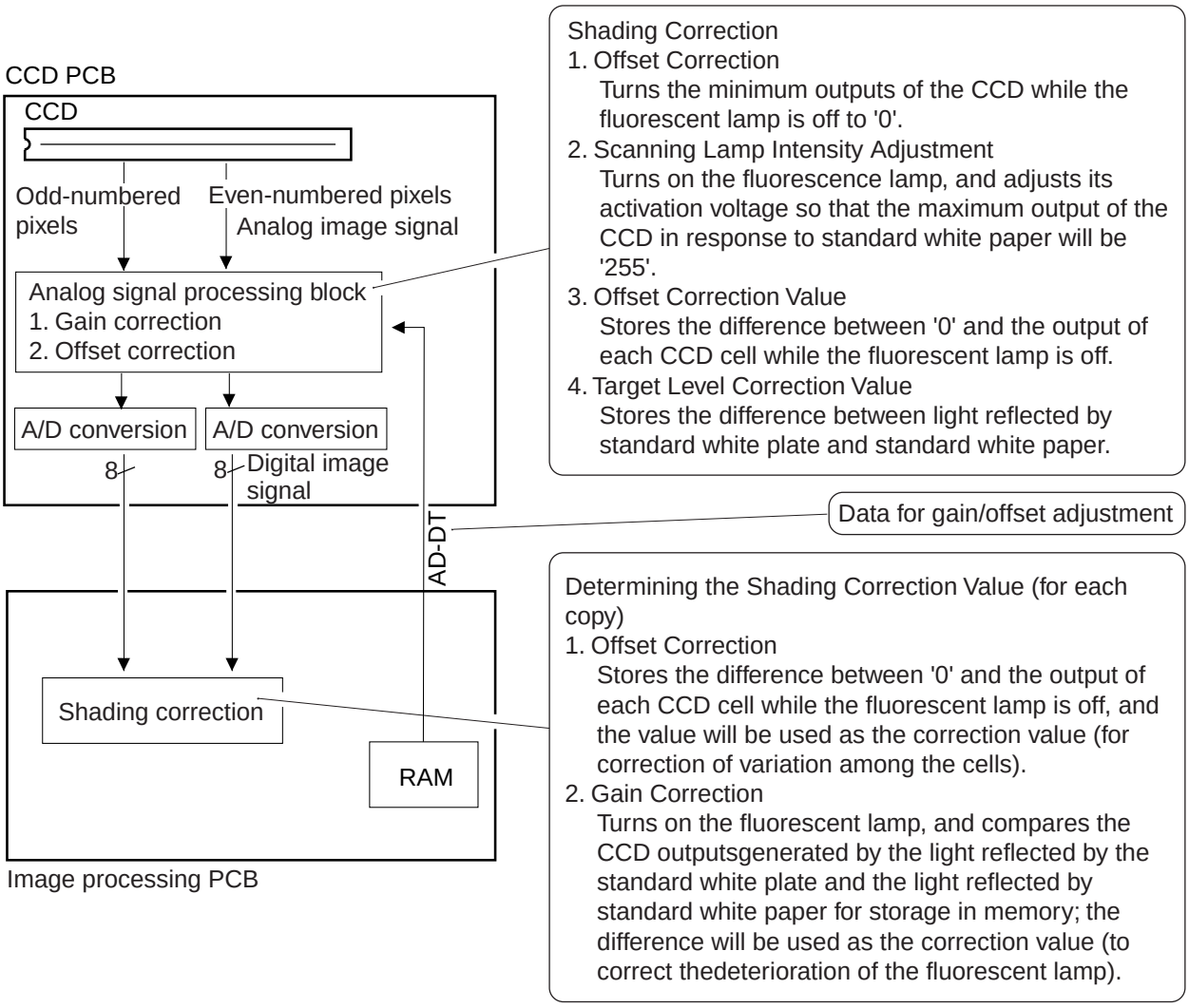

CCD PCB
CCD
Odd-numbered pixels
Even-numbered pixels
Analog image signal
Analog signal processing block
1. Gain correction
2. Offset correction
A/D conversion
A/D conversion
8
8
Digital image signal
AD-DT
Shading correction
RAM
Image processing PCB
Shading Correction
1. Offset Correction
Turns the minimum outputs of the CCD while the fluorescent lamp is off to '0'.
2. Scanning Lamp Intensity Adjustment
Turns on the fluorescence lamp, and adjusts its activation voltage so that the maximum output of the CCD in response to standard white paper will be '255'.
3. Offset Correction Value
Stores the difference between '0' and the output of each CCD cell while the fluorescent lamp is off.
4. Target Level Correction Value
Stores the difference between light reflected by standard white plate and standard white paper.
Data for gain/offset adjustment
Determining the Shading Correction Value (for each copy)
1. Offset Correction
Stores the difference between '0' and the output of each CCD cell while the fluorescent lamp is off, and the value will be used as the correction value (for correction of variation among the cells).
2. Gain Correction
Turns on the fluorescent lamp, and compares the CCD outputsgenerated by the light reflected by the standard white plate and the light reflected by standard white paper for storage in memory; the difference will be used as the correction value (to correct thedeterioration of the fluorescent lamp).

Figure 4-302 Shading Correction Block Diagram

Related Service Mode

COPIER>ADJUST>CCD>GAIN-E/O (CCD output gain adjustment input)	If a faulty image is noted after executing COPIER>FUNCTION>CCD>CCD-ADJ, enter the value recorded on the service label.
COPIER>ADJUST>CCD>OFST-E/O (CCD output offset adjustment value input)	
COPIER>ADJUST>CCD>SH-TRGT (white level target value input for shading correction)	

COPIER>FUNCTION>CCD>CCD-ADJ (shading auto adjustment)	For details of execution, see VIII. "Service Mode" in Chapter 13.

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D. Line Conversion

In this block even-numbered/odd-numbered pixels (parallel processing) are converted into even-numbered/odd-numbered lines (parallel processing) for division into two channels (lasers A and B).

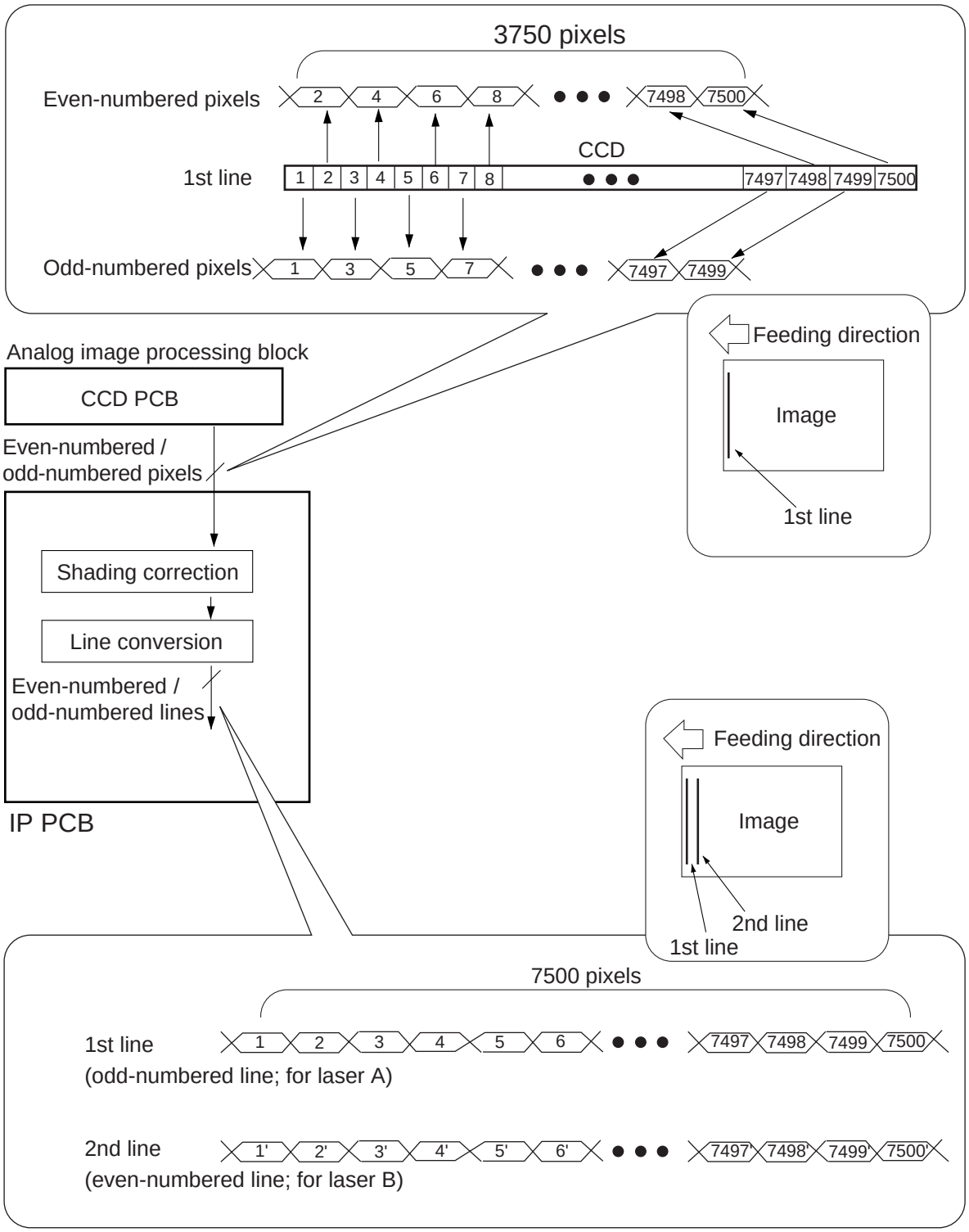


Figure 4-303 Conceptual Diagram of Line Conversion

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E. Editing

The digital image processing block performs the following editing functions:

[1]	Enlargement/reduction (main scanning direction)	🕮 Volume 3>Chapter 4>IV.D.1. "Enlargement/Reduction Processing"
[2]	Edge emphasis	🕮 Volume 3>Chapter 4>IV.E.2. "AI Outline Processing"
[3]	Negative/positive reversal	🕮 Volume 3>Chapter 4>IV.F.1. "Negative/Positive Reversal"
[4]	Frame Erasing	
[5]	Rotation	
[6]	Shift	🕮 Volume 3>Chapter 4>IV.D.2. "Shift"
[7]	Layout	
[8]	Image synthesis	

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F. Density Processing

1. Outline

The digital image processing block performs the following density processing:

[1] LOG conversion 🕮 Volume 3>Chapter 4>IV.G.1. "Logarithmic Correction"

[2] Density correction 🕮 Volume 3>Chapter 4>IV.G.2. "Density Processing"

[3] AE processing 🕮 Volume 3>Chapter 4>IV.G.2. "Density Processing"

[4] Density adjustment 🕮 Volume 3>Chapter 4>IV.G.2. "Density Processing"

[5] Density adjustment during printing

Of the foregoing functions, 1. through 4. are performed when scanner input image data is being read, and 5. is performed when printing scanner input image data/PDL input image data.

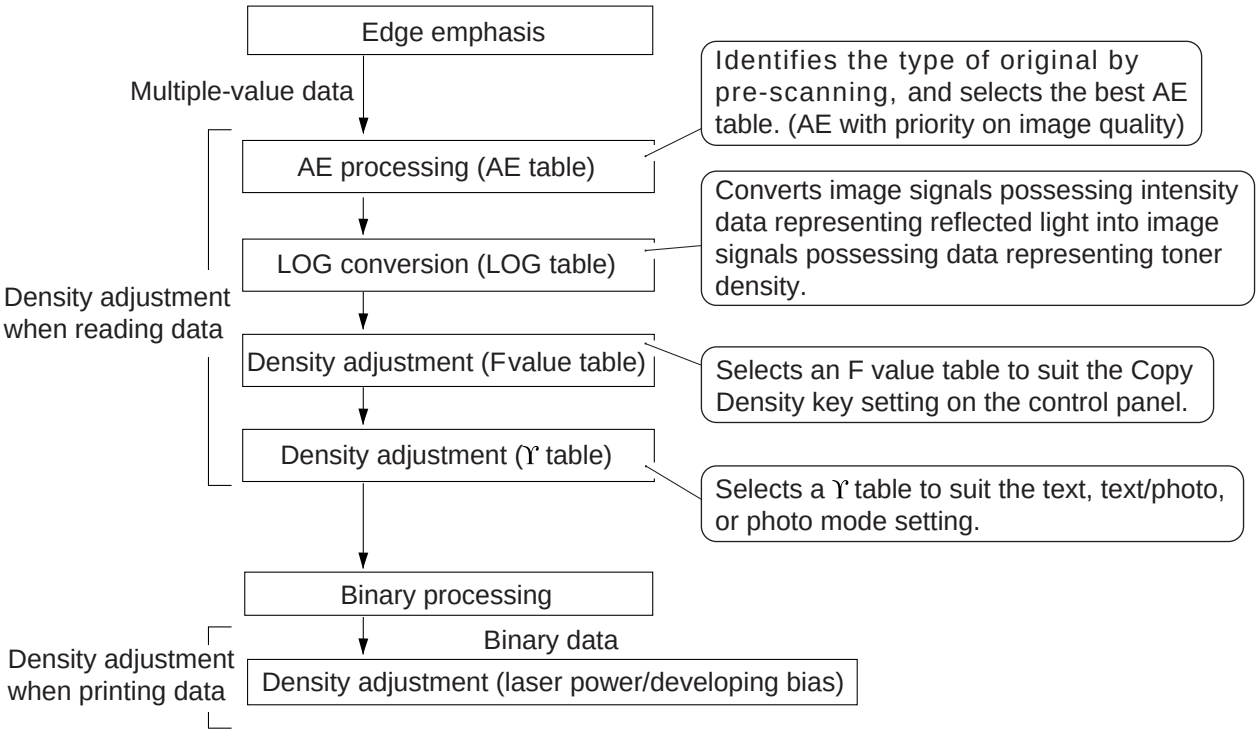
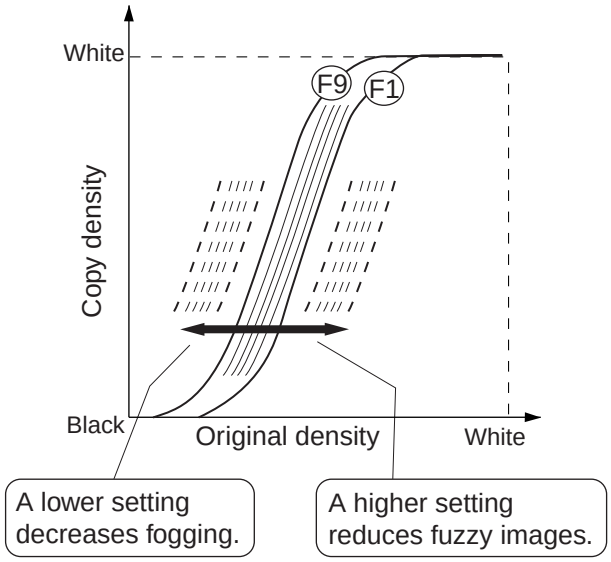

Edge emphasis
Multiple-value data
AE processing (AE table)
Identifies the type of original by pre-scanning, and selects the best AE table. (AE with priority on image quality)
LOG conversion (LOG table)
Converts image signals possessing intensity data representing reflected light into image signals possessing data representing toner density.
Density adjustment when reading data
Density adjustment (Fvalue table)
Selects an F value table to suit the Copy Density key setting on the control panel.
Density adjustment (γ table)
Selects a γ table to suit the text, text/photo, or photo mode setting.
Binary processing
Binary data
Density adjustment when printing data
Density adjustment (laser power/developing bias)

Figure 4-304 Flow of Density Processing

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Related Service Mode

COPIER>ADJUST>DENS>DENS-ADJ (copy density correction)	If the copy image is foggy or the high-density area is fuzzy, use this mode to correct the F value table. Setting range: 0 to 9 (default at 3) 

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2. Density Adjustment during Printing

The image data is in binary form when printing starts, and the data does not possess density information. To adjust the density of images during printing, the copier corrects the laser intensity and the developing bias as follows:

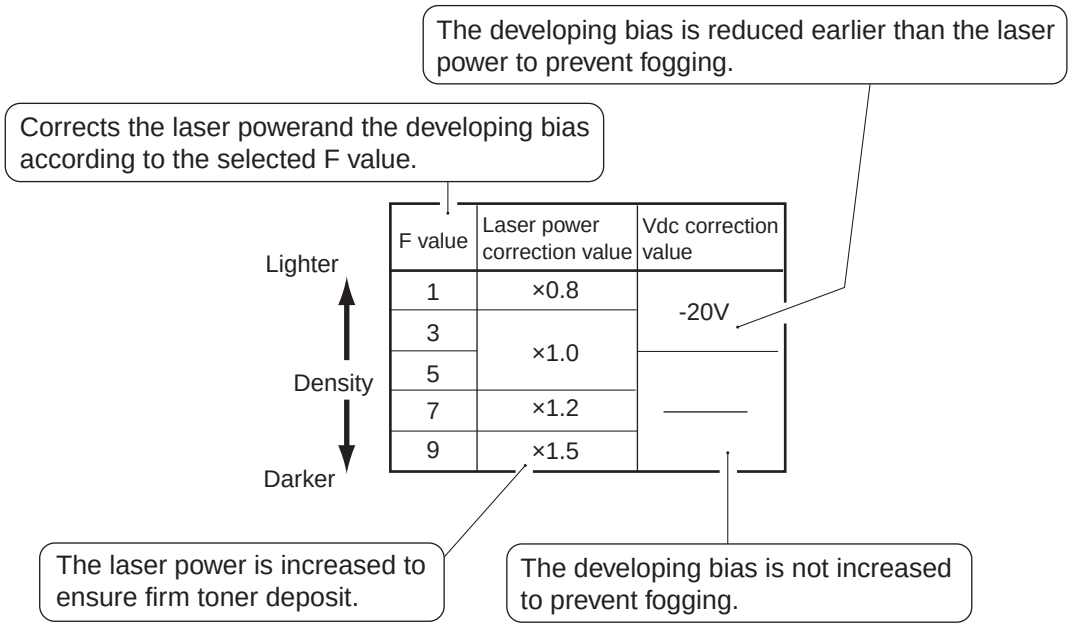


Table 4-302 Correction Table for Scanner Input

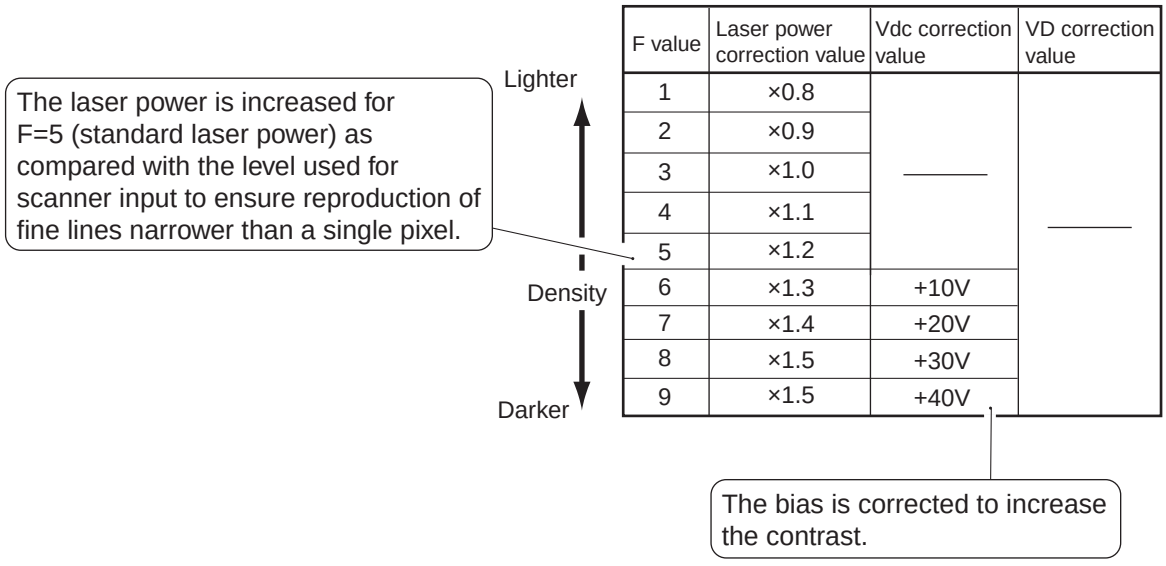


Table 4-303 Correction Table for PDL Input

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G. Binary Processing

The copier performs binary processing for the following:

[1] Print photo mode (dither screen method)
[2] Text, text/photo mode, print photo mode (R-ED, i.e., random error diffusion, method)

1. Dither Screen Method

Image data is subjected to screen processing so that the images may be produced in 256 gradations out of binary data.

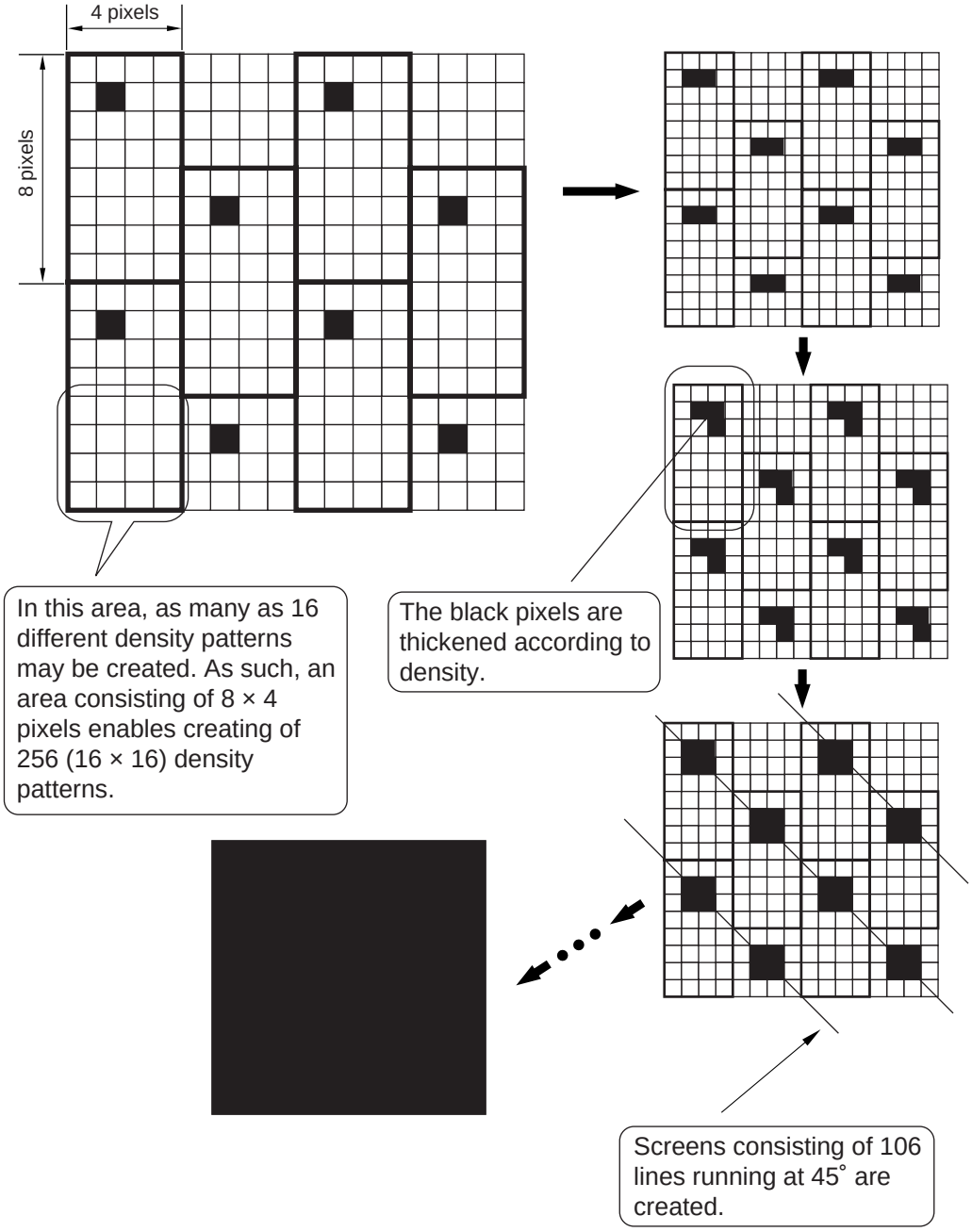

4 pixels
8 pixels
In this area, as many as 16 different density patterns may be created. As such, an area consisting of 8 × 4 pixels enables creating of 256 (16 × 16) density patterns.
The black pixels are thickened according to density.
Screens consisting of 106 lines running at 45° are created.

Figure 4-305A Conceptual Diagram of the Dither Screen Method

2. Random Error Diffusion (R-ED) Method

In the existing error diffusion (ED) method, a fixed pattern (error diffusion matrix) is used to diffuse (distribute) errors occurring as a result of binary processing over surrounding pixels, possibly generating specific patterns on the output images. To reduce such patterns, the copier adds random values to the image signals representing pixels (hence, random error diffusion).

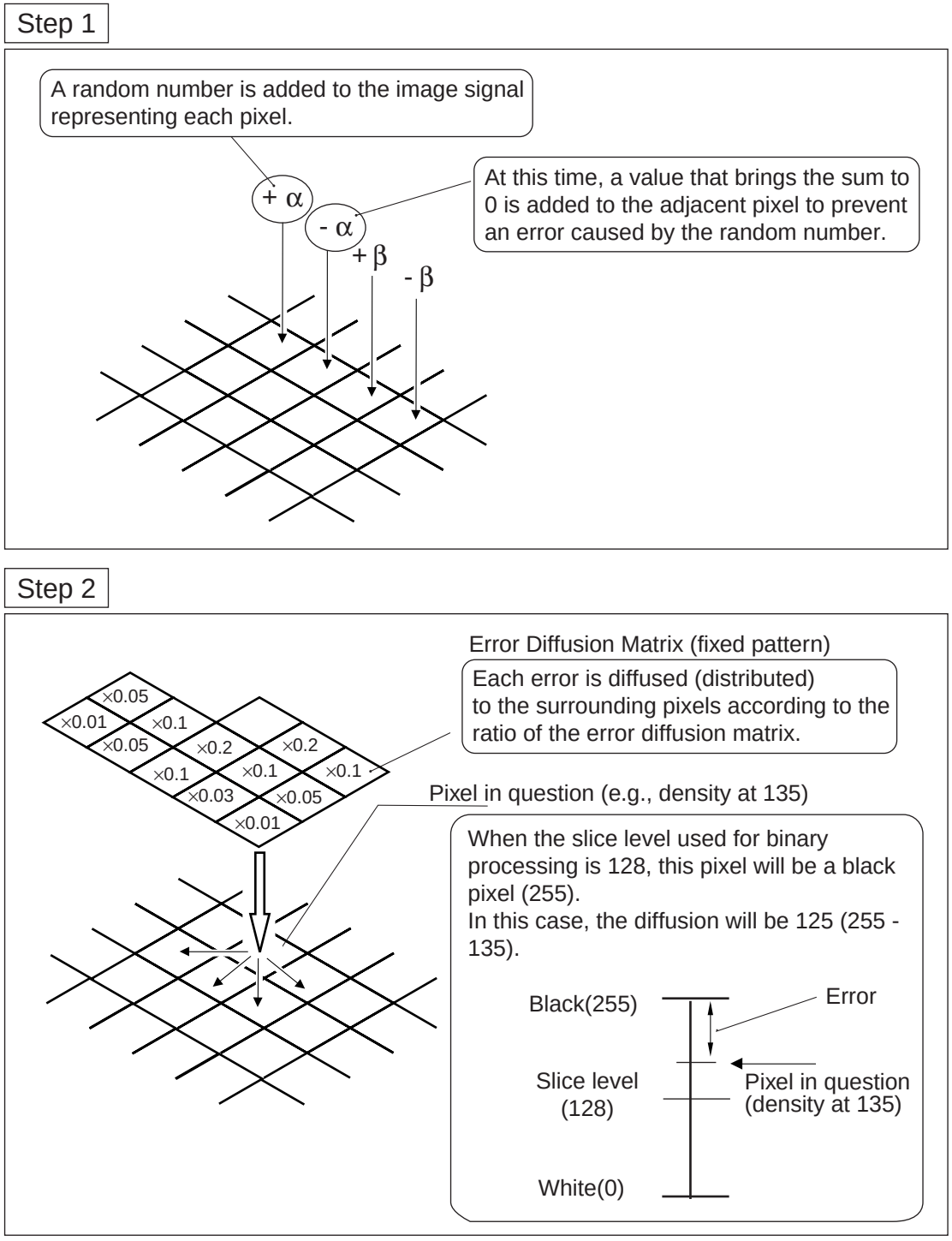

Step 1
A random number is added to the image signal representing each pixel.
+ α
- α
+ β
- β
At this time, a value that brings the sum to 0 is added to the adjacent pixel to prevent an error caused by the random number.
Step 2
Error Diffusion Matrix (fixed pattern)
Each error is diffused (distributed) to the surrounding pixels according to the ratio of the error diffusion matrix.
×0.05
×0.01
×0.1
×0.05
×0.2
×0.2
×0.1
×0.1
×0.1
×0.03
×0.05
×0.01
Pixel in question (e.g., density at 135)
When the slice level used for binary processing is 128, this pixel will be a black pixel (255).
In this case, the diffusion will be 125 (255 - 135).
Black(255)
Error
Slice level (128)
Pixel in question (density at 135)
White(0)

Figure 4-305B Conceptual Diagram of the Error Diffusion Method

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H. Image Memory

The copier is equipped with the following image memory:

[1] Image server (hard disk)
[2] Memory board (DRAM; page memory)

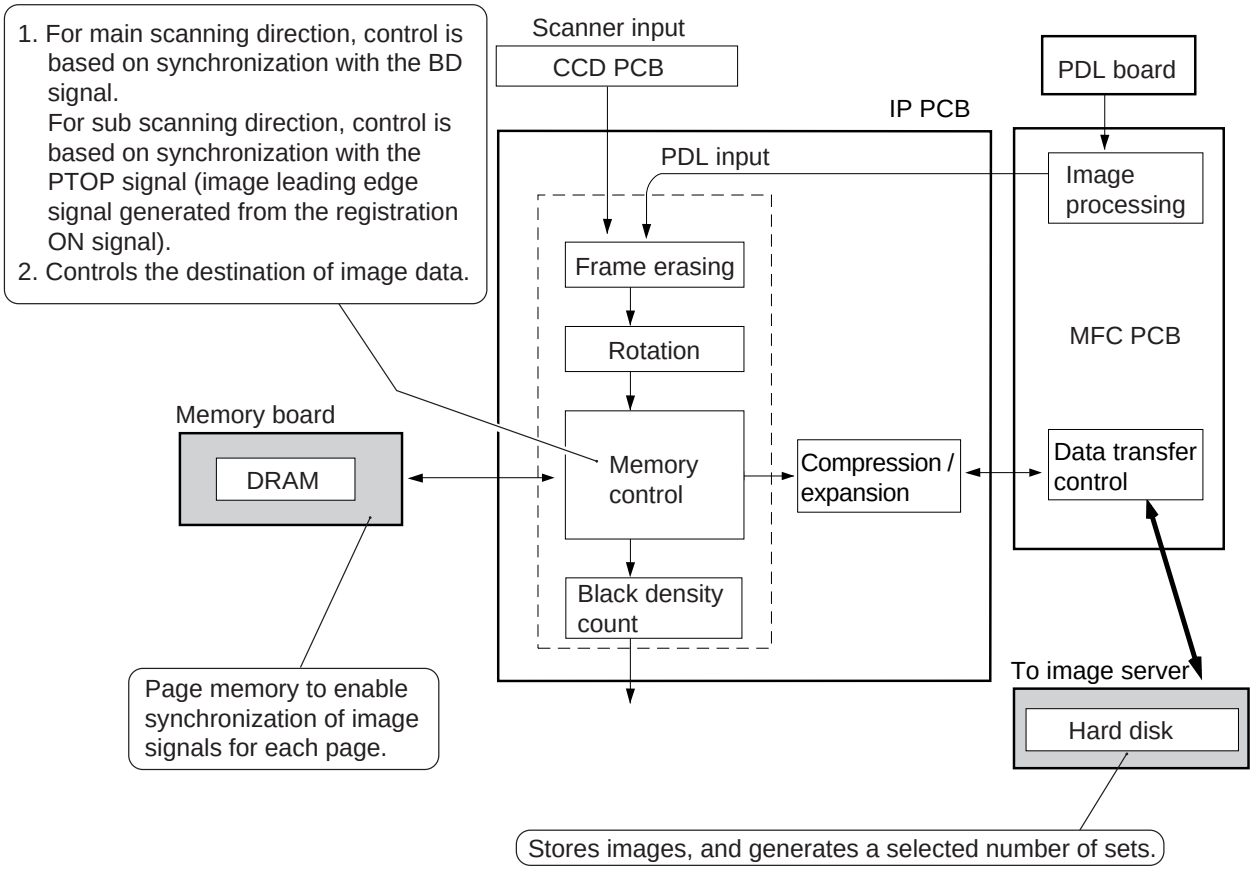

1. For main scanning direction, control is based on synchronization with the BD signal.
For sub scanning direction, control is based on synchronization with the PTOP signal (image leading edge signal generated from the registration ON signal).
2. Controls the destination of image data.
Scanner input
CCD PCB
PDL board
IP PCB
PDL input
Image processing
Frame erasing
Rotation
MFC PCB
Memory board
DRAM
Memory control
Compression / expansion
Data transfer control
Black density count
To image server
Hard disk
Page memory to enable synchronization of image signals for each page.
Stores images, and generates a selected number of sets.

Figure 4-306 Image Memory Block Diagram

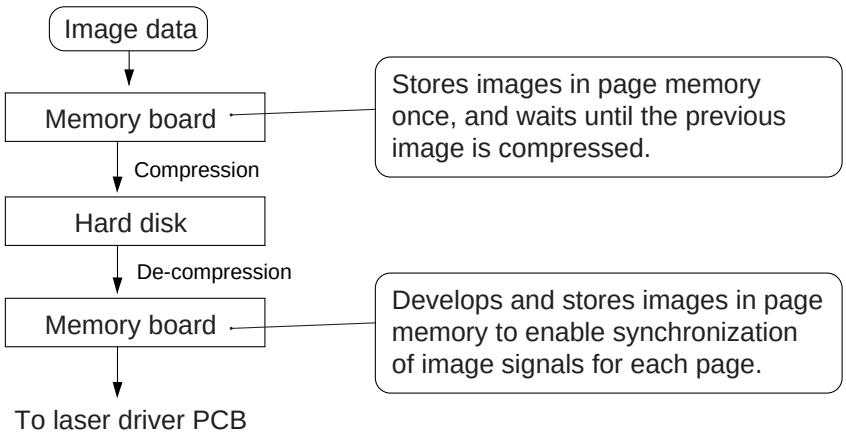

Image data
Memory board
Stores images in page memory once, and waits until the previous image is compressed.
Compression
Hard disk
De-compression
Memory board
Develops and stores images in page memory to enable synchronization of image signals for each page.
To laser driver PCB

Figure 4-307 Flow of Image Data

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Related Service Mode

COPIER>OPTION>BODY>PM-RD-MD (page memory read control on/off)	1: Read while writing to page memory. (default) 0: Read at the end of writing a single-page equivalent of data into page memory, thereby preventing jams in memory otherwise caused by jams in the feeder.
COPIER>FUNCTION>HRD-DISK>FOR-MAT (hard disk formatting)	• Use it to initialize the hard disk. • Use it on a normal hard disk. • Use it when replacing the hard disk (or at time of shipment from the factory). • Execution takes about 1 sec.
COPIER>FUNCTION>HRD-DISK>SCAN-DISK (hard disk scanning)	• Use it to check the hard disk for errors or to initialize it. • Use it to a hard disk with a fault. • Execution takes about 25 min.

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I. Detecting the Orientation of Originals

In this block, the orientation of text data is checked to identify the orientation of an original so that reduced page composition may take place in the correct orientation regardless of the orientation of each original in the ADF.

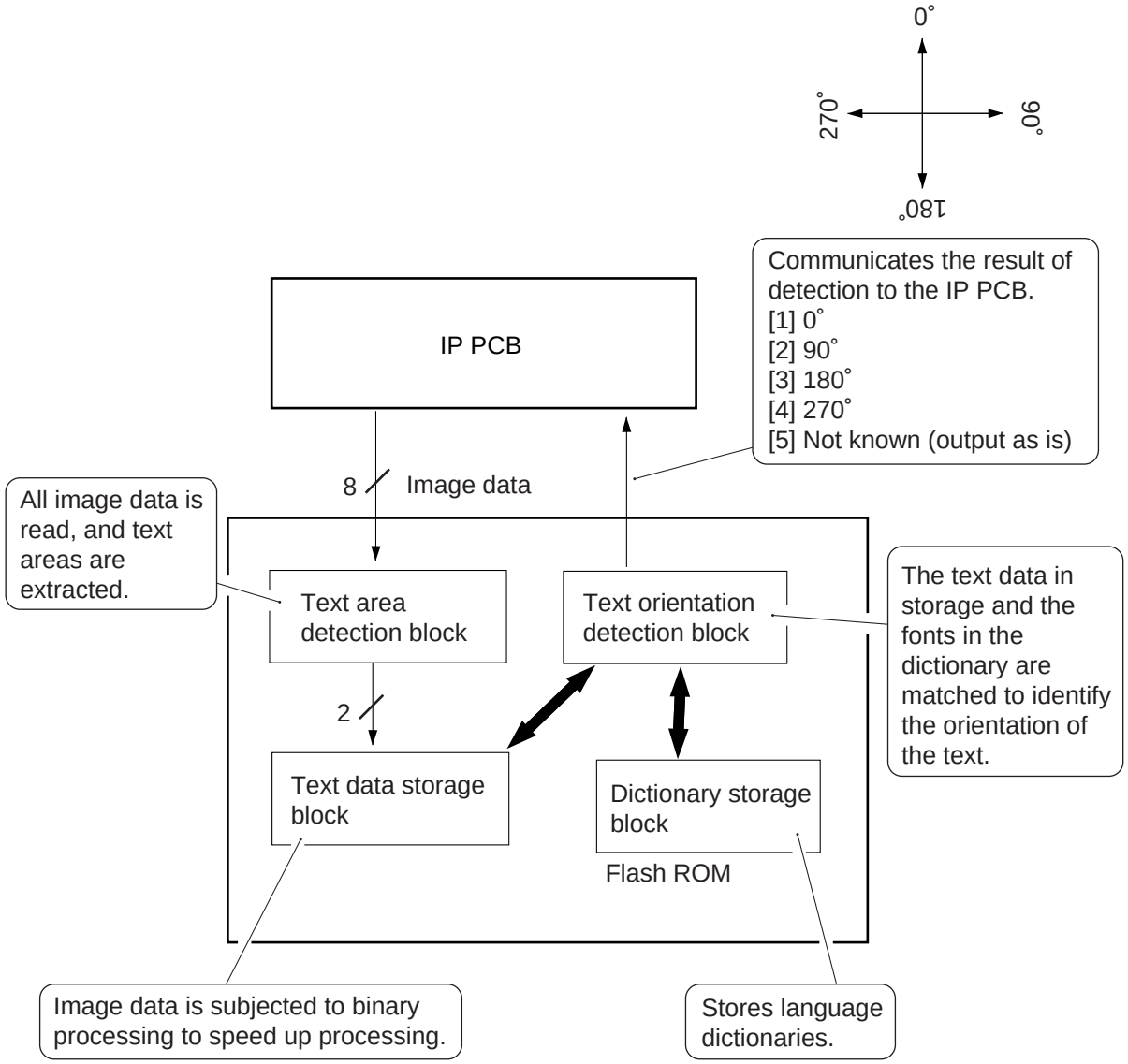

0°
270°
90°
180°
IP PCB
Communicates the result of detection to the IP PCB.
[1] 0°
[2] 90°
[3] 180°
[4] 270°
[5] Not known (output as is)
8
Image data
All image data is read, and text areas are extracted.
Text area detection block
Text orientation detection block
The text data in storage and the fonts in the dictionary are matched to identify the orientation of the text.
2
Text data storage block
Dictionary storage block
Flash ROM
Image data is subjected to binary processing to speed up processing.
Stores language dictionaries.

Figure 4-308 Conceptual Diagram of Detection

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J. Black Pixel Count

In this block, the black pixels in image data are counted to obtain an estimate of the amount of toner on paper. Using the resulting data, the copier optimizes the current level of the separation DC bias.

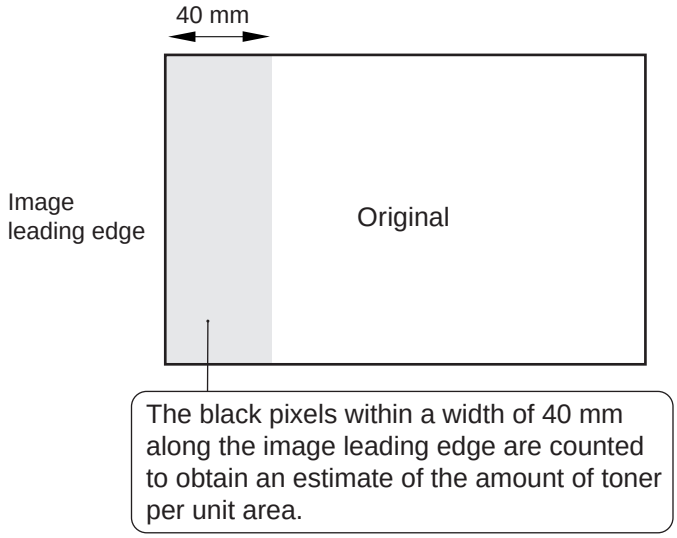

40 mm
Image
leading edge
Original
The black pixels within a width of 40 mm along the image leading edge are counted to obtain an estimate of the amount of toner per unit area.

Figure 4-309 Range of Counting Black Pixels

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IV . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. CCD PCB

1. Removing the CCD PCB

1) Remove the copyboard glass.
2) Move the No. 1 mirror mount to the left end.
3) Remove the two screws [1], and disconnect the connector [2]; then, detach the original sensor unit (rear) [3].

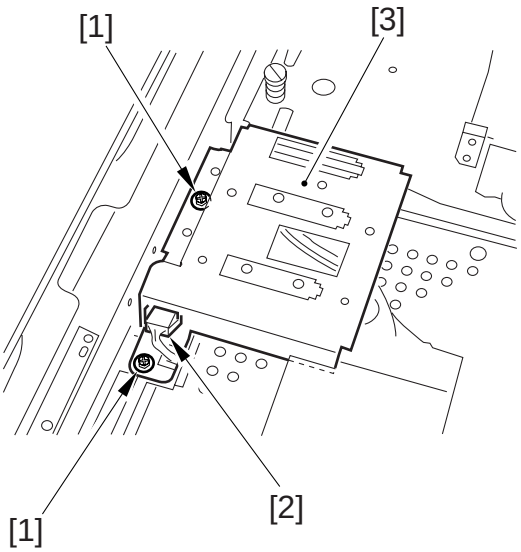


Figure 4-A401

4) Release the front and rear claws, and detach the CCD cover [4].

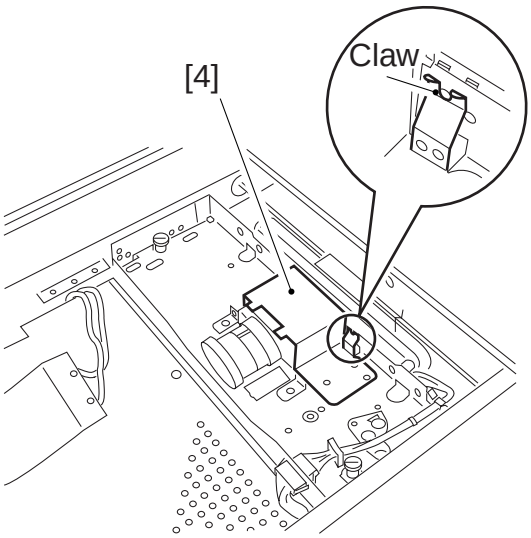


Figure 4-A402

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5) Remove the three fixing screws [5], and disconnect the connector [6]; then, detach the flat cable [7] from the CCD PCB, and detach the CCD unit [8].

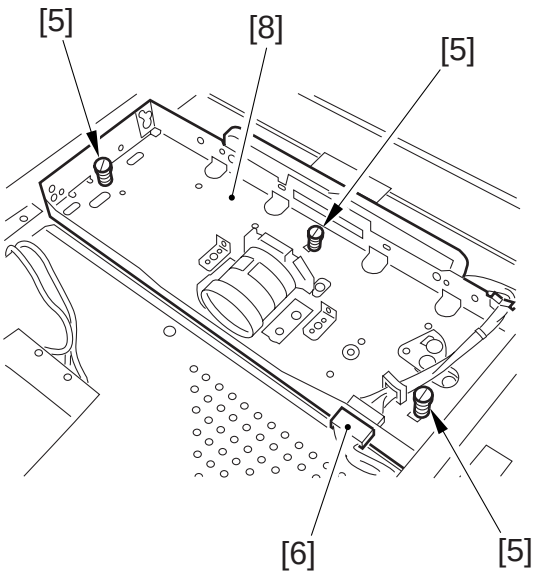


Figure 4-A403

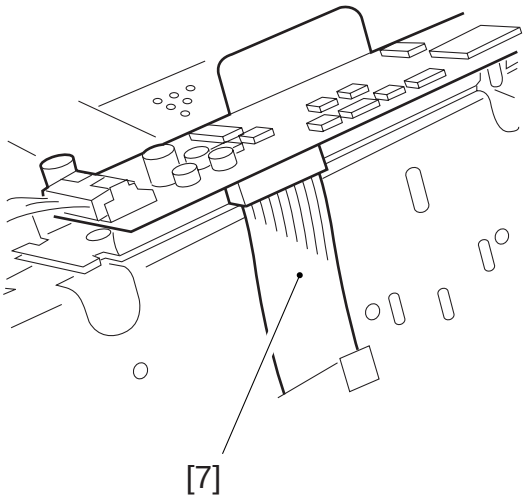


Figure 4-A404

2. After Replacing the CCD Unit

1) Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
2) When all items under COPIER>ADJUST>CCD and data under COPIER>ADJUST>LAMP>L-DATA have been updated, record the results on the service label.

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B. Image Processor PCB

1. Removing the Image Processor PCB

1) Remove the copyboard glass.
2) Move the No. 1 mirror mount to the left edge.
3) Remove the two screws [1], and disconnect the connector [2]; then, detach the original sensor unit (rear) [3].

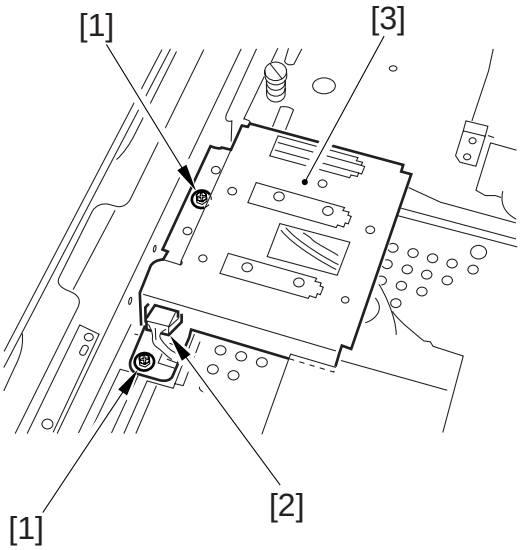


Figure 4-B401

4) Remove the two screws [4], and detach the flat cable [5].

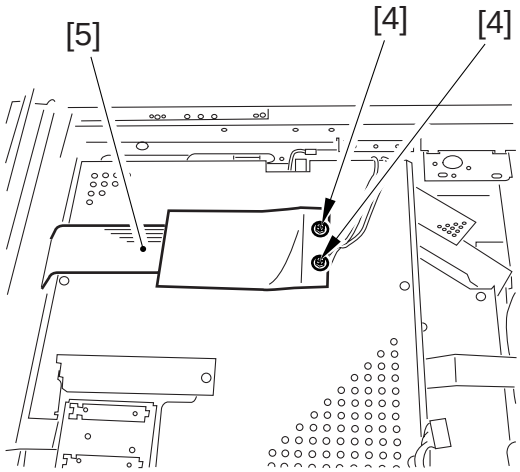


Figure 4-B402

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5) Remove the four screws [6], and detach the image processor cover [7].

Caution:
At this time, take care not to damage the flat cable removed in step 4).

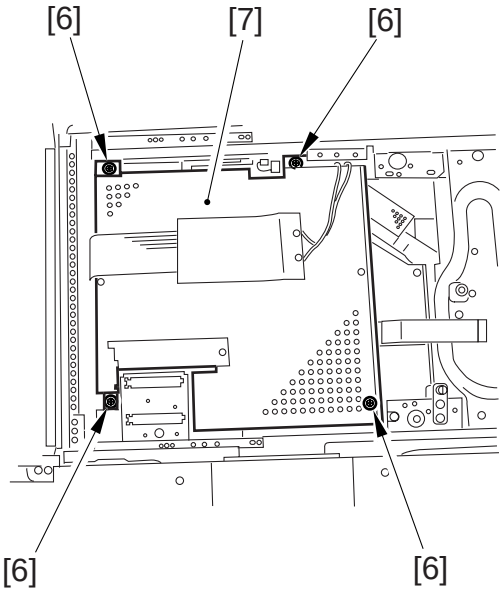


Figure 4-B403

6) Disconnect the seven connectors [9] of the image processor PCB [8], and remove the six screws [10]; then, detach the image processor PCB [8].

Caution:
At this time, take care not to damage the connector [12] of the image processor PCB and the original orientation PCB [11].

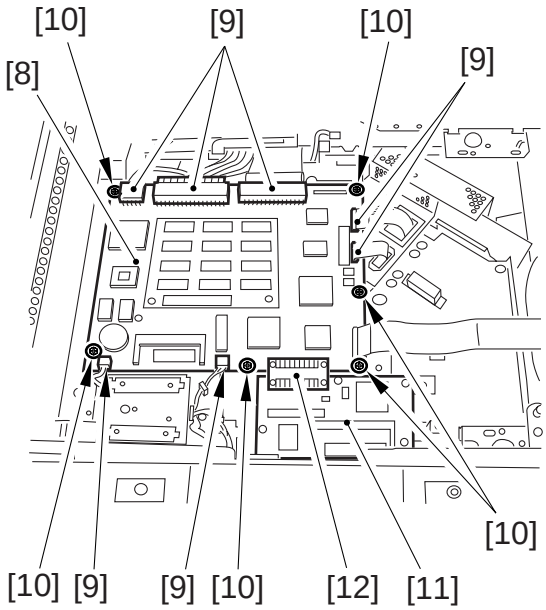


Figure 4-B404

2. After Replacing the Image Processor PCB

See G. "Electrical Parts" under II. of Chapter 13.

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C. Hard Disk (image server)

1. Removing the Hard Disk (image server)

1) Remove the rear cover.
2) Open the system box.
3) Remove the system cover, face plate, and partition. (See Figures 9-K701 and -K702.)
4) Disconnect the two connectors [1], and remove the four screws [2]; then, detach the hard disk (image server) [3] together with the mounting plate.

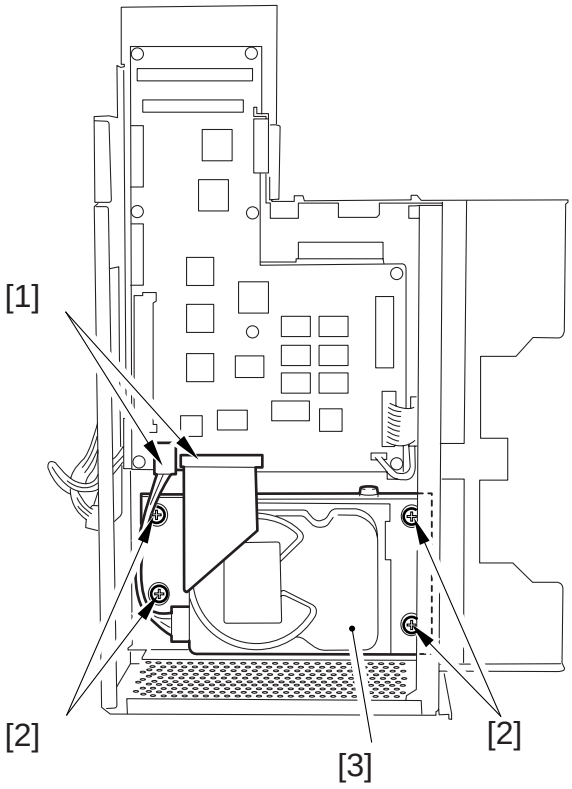


Figure 4-C401

5) Remove the four screws [4], and take out the hard disk (image sever) [3].

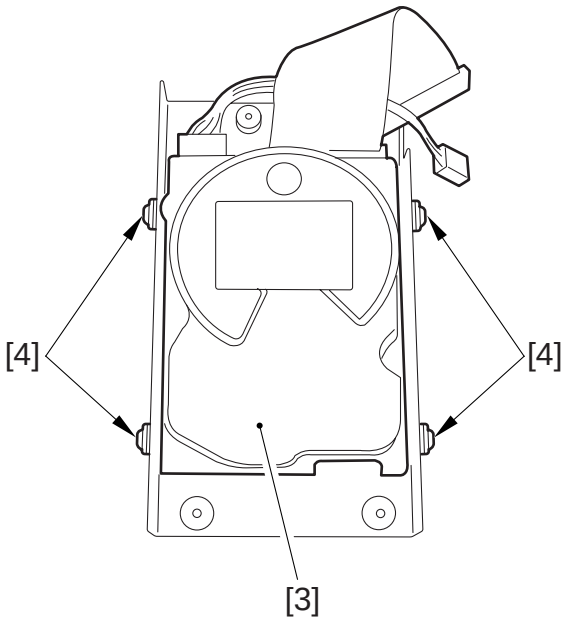


Figure 4-C402

2. After Replacing the Hard Disk (image server)

See G. "Electrical Parts" under II. of Chapter 13.

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D. Others

1. Removing the System Motherboard

1) Remove the rear cover.
2) Remove the three flat cables [1] and three screws [2]; then, open the system box [3].

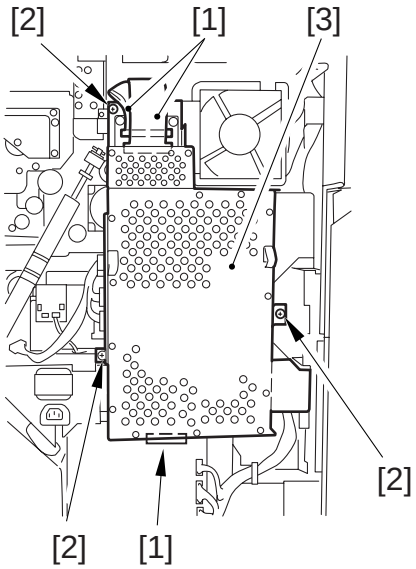


Figure 4-D401

3) Disconnect the three connectors [4], and remove the four screws [5]; then, detach the motherboard [6].

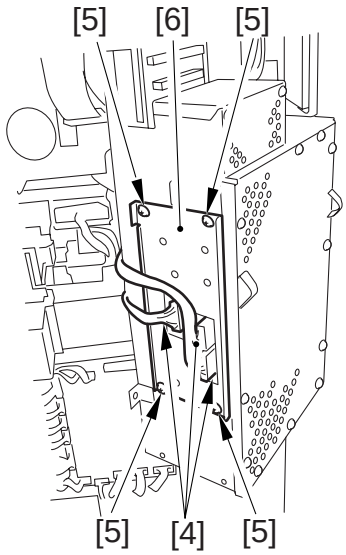


Figure 4-D402

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2. Removing the Memory Board

1) Remove the copyboard glass.
2) Move the No. 1 mirror mount to the left edge.
3) Remove the original sensor unit (rear).
4) Remove the CCD cover.
5) Remove the CCD unit.
6) Remove the image processor cover.
7) Remove the two screws [1], and detach the memory board [3] from the image processor PCB [2].

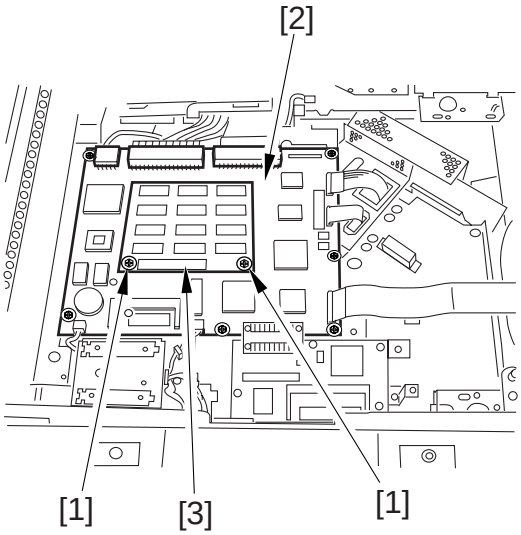


Figure 4-D403

3. Removing the Various Printer Boards

1) Remove the rear cover.
2) Remove the two screws [1], and detach the printer board unit [3] from the system box [2].

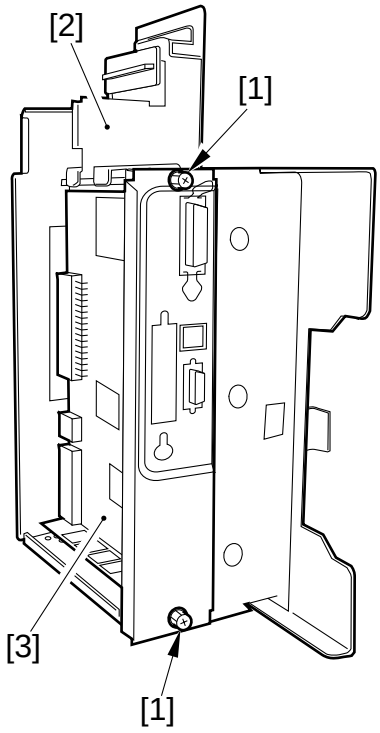


Figure 4-D404

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3) Remove the seven screws [4], and detach the printer board [5].

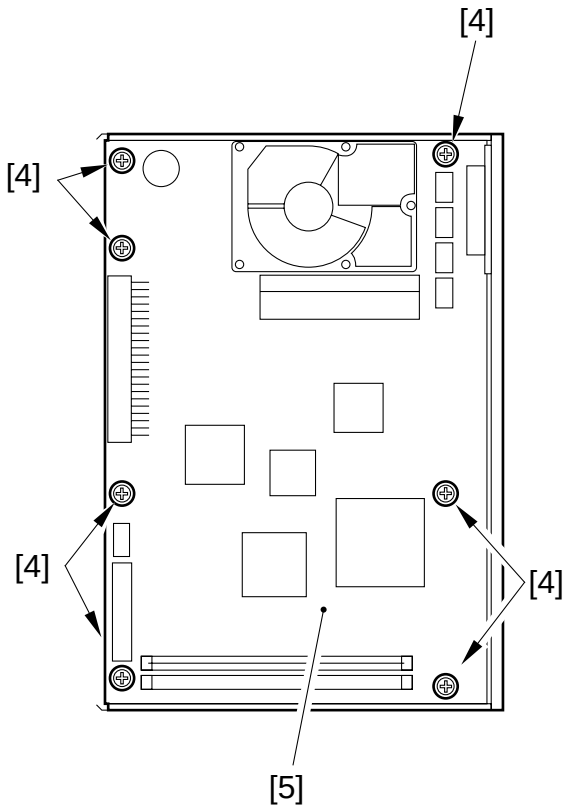


Figure 4-D405

4. Removing the Original Detection PCB

1) Remove the copyboard glass.
2) Move the No. 1 mirror mount to the left end.
3) Remove the two screws [1], and disconnect the connector [2]; then, detach the original sensor unit (rear) [3].

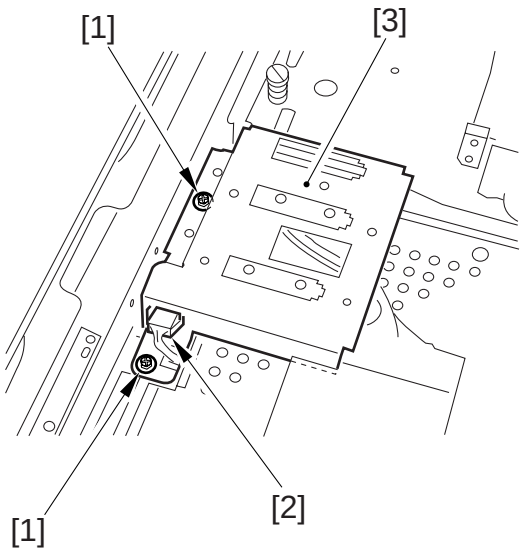


Figure 4-D406

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4) Release the front and rear claws of the CCD cover [4], and detach the CCD cover [4].

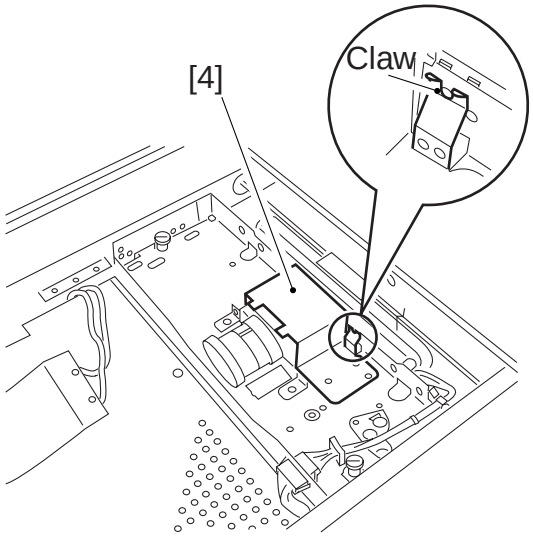


Figure 4-D407

5) Remove the three fixing screws [5], and disconnect the connector [6]; then, detach the flat cable [7] from the CCD PCB, and detach the CCD unit [8].

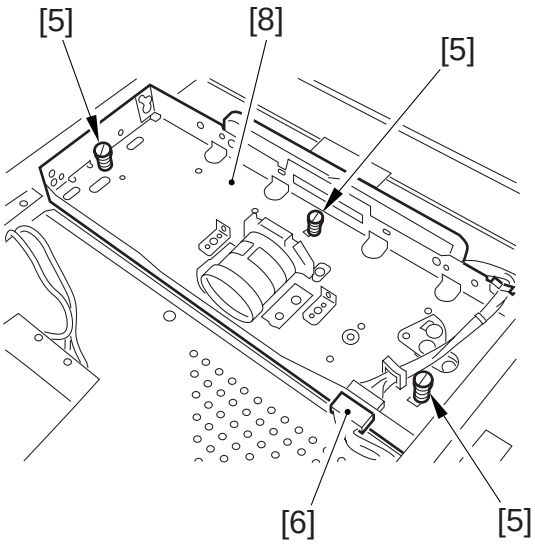


Figure 4-D408

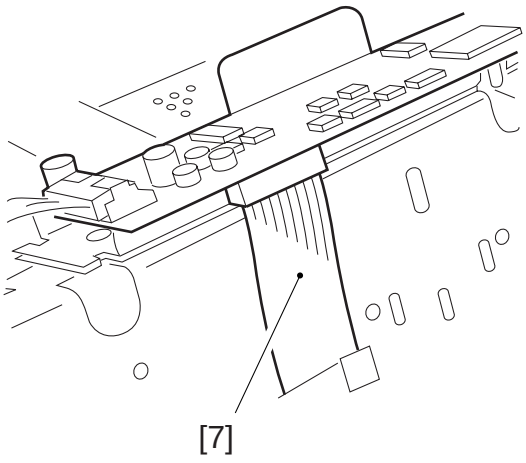


Figure 4-D409

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6) Remove the two screws [9], and detach the flat cable [10].

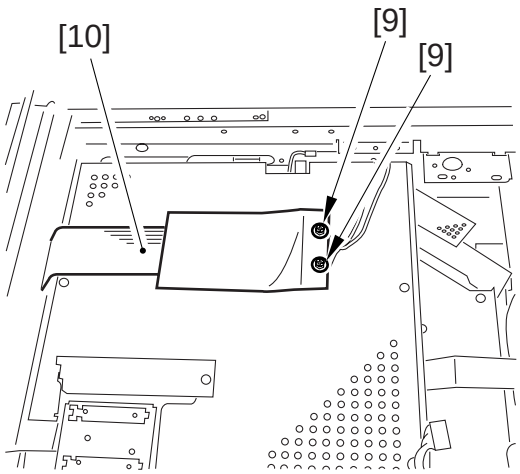


Figure 4-D410

7) Remove the four screws [11], and detach the image processor cover [12].

Caution:
Take care not to damage the flat cable removed in step 6).

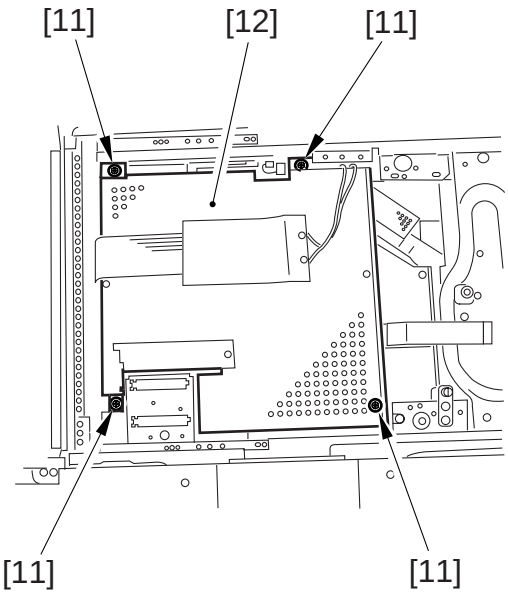


Figure 4-D411

8) Remove the three screws [13], and detach the original orientation detection PCB [14].

Caution:
Take care not to damage the connector [15] of the image processor PCB and the original orientation detection PCB [14].

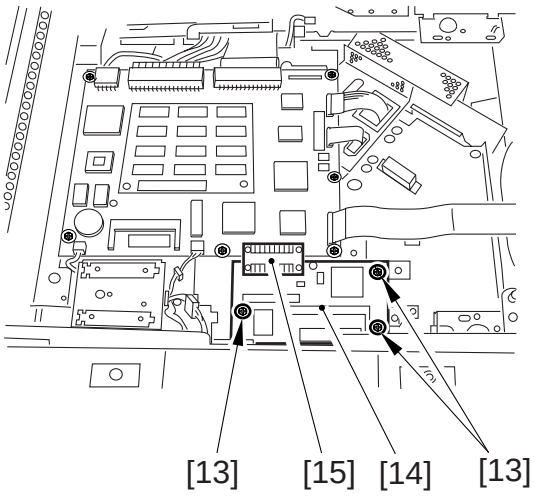


Figure 4-D412

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CHAPTER 5

LASER EXPOSURE SYSTEM

This chapter provides descriptions on the copier's laser exposure operations, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

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I . OPERATIONS

A. Outline

🕮 Volume 4>Chapter 4>I.A. "Outline"

Item	Description
Laser intensity control	[1] APC control [2] Optimum intensity control to suit the surface potential of the drum
Laser scanning	By 2 laser semiconductors (laser A, B)
Synchronization control	Main scanning direction: by BD signal (based on laser B) Sub scanning direction: by PTOP signal (image leading edge signal in page memory)
Laser scanner motor control	[1] Constant speed rotation control [2] Full-speed/wait rotation switching

Table 5-101 Major Functions

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Figure 5-101 shows the major components of the laser exposure system.

To accommodate the increase in copying speed, laser scanning is performed by two beams (lasers A and B).

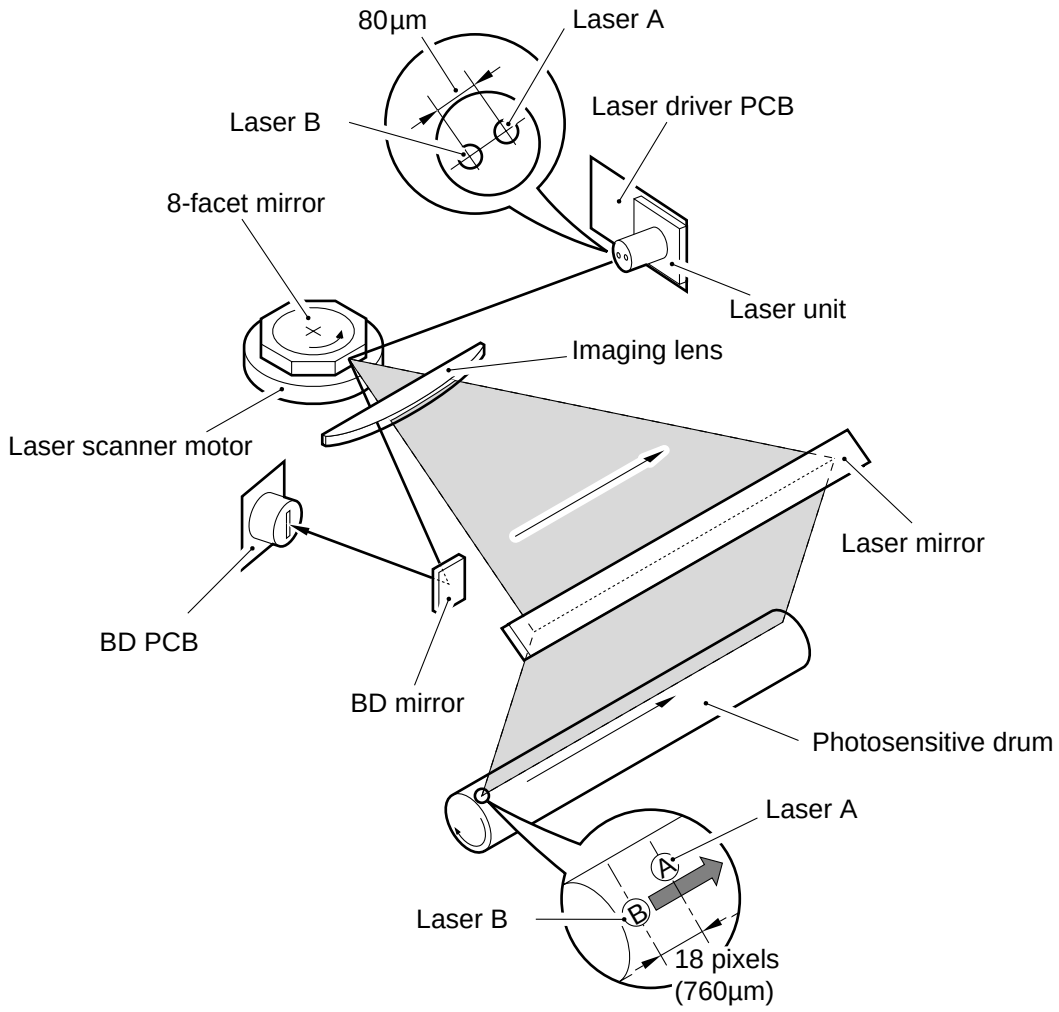


Figure 5-101 External View

Component	Notation	Description
Laser semiconductor		Visible laser light (675 nm), 2 beams
Laser scanner motor	M4	DC motor, 2-speed control
Polygon mirror		8-faceted
RD mirror/BD detection PCB		
Laser driver PCB		Laser activation control
Laser scanner motor driver PCB		Laser scanner motor rotation control

Table 5-102 Components

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The laser A and the laser B have a discrepancy of 80 µm (between light-emitting sections) as follows:

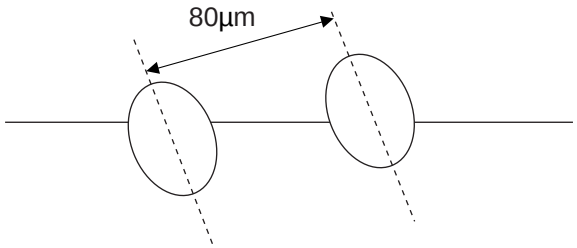


Figure 5-102

A delay is initiated in the image signals on the image processor PCB to generate a delay of 760 µm (equivalent of 18 pixels) at time of scanning the drum, thereby preventing interference of laser beams.

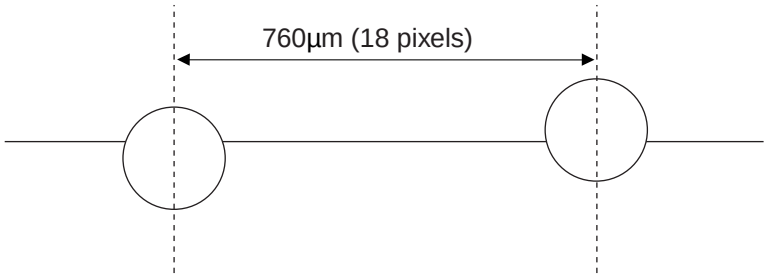


Figure 5-103

Related Service Mode

COPIER>ADJUST>LASER>IP-DELAY (image processor PCB display input)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the values recorded on the label attached to the PCB.
COPIER>ADJUST>LASER>LA-DELAY (laser unit delay value input)	If you have replaced the laser unit or the image processor PCB, or if you have initialized the RAM on the image processor PCB, enter the value recorded on the label attached to the laser unit.

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B. Basic Sequence of Operations (laser exposure system)

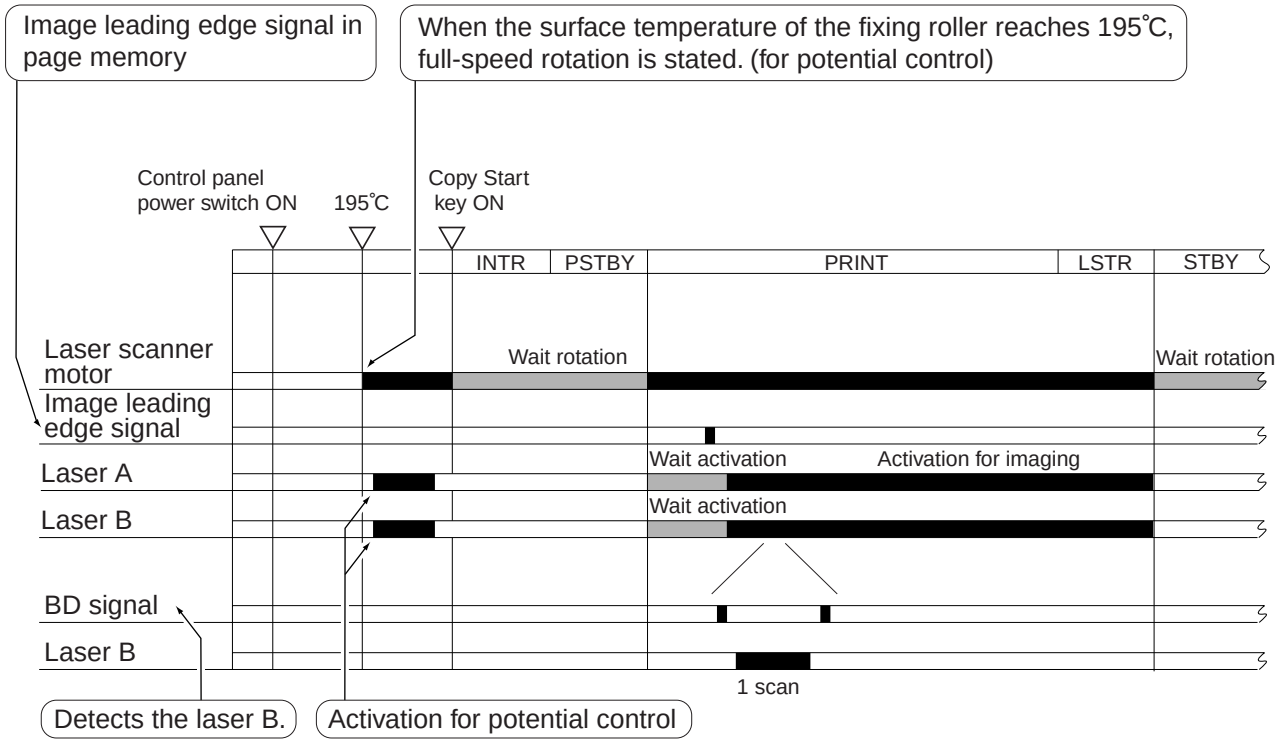


Figure 5-104 Basic Sequence of Operations

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II . GENERATING THE BD SIGNAL

A. Outline

📖 Volume 4>Chapter 5>II. "Generating the BD Signal."

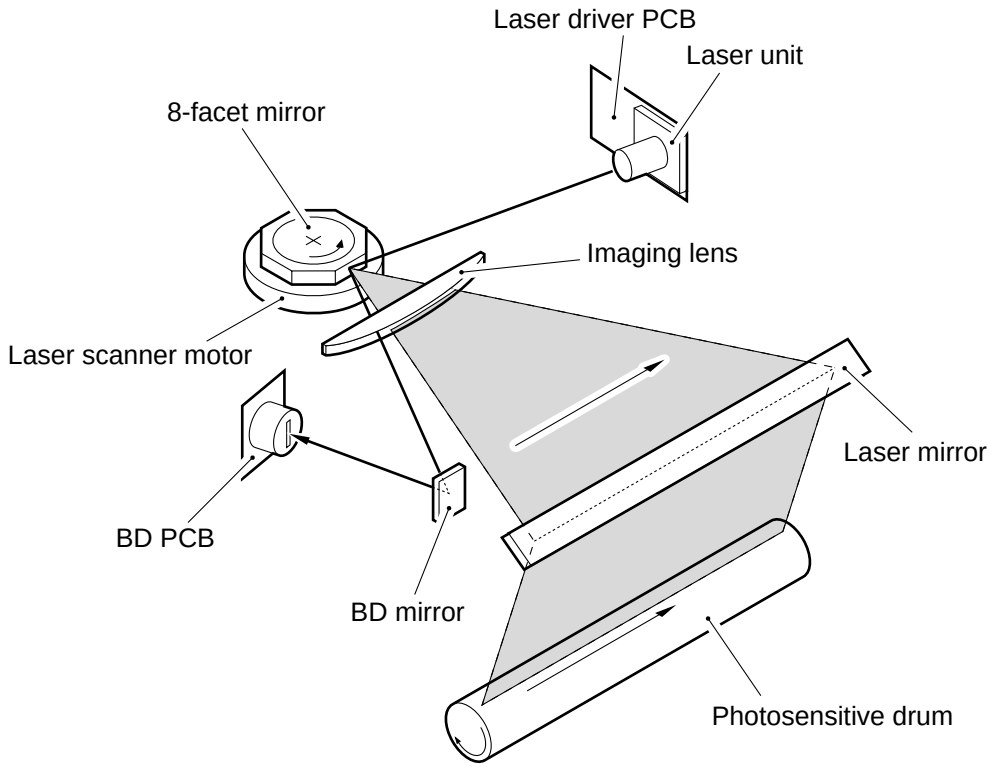


Figure 5-201 Construction of the Control System

B. Flow of the BD Signal

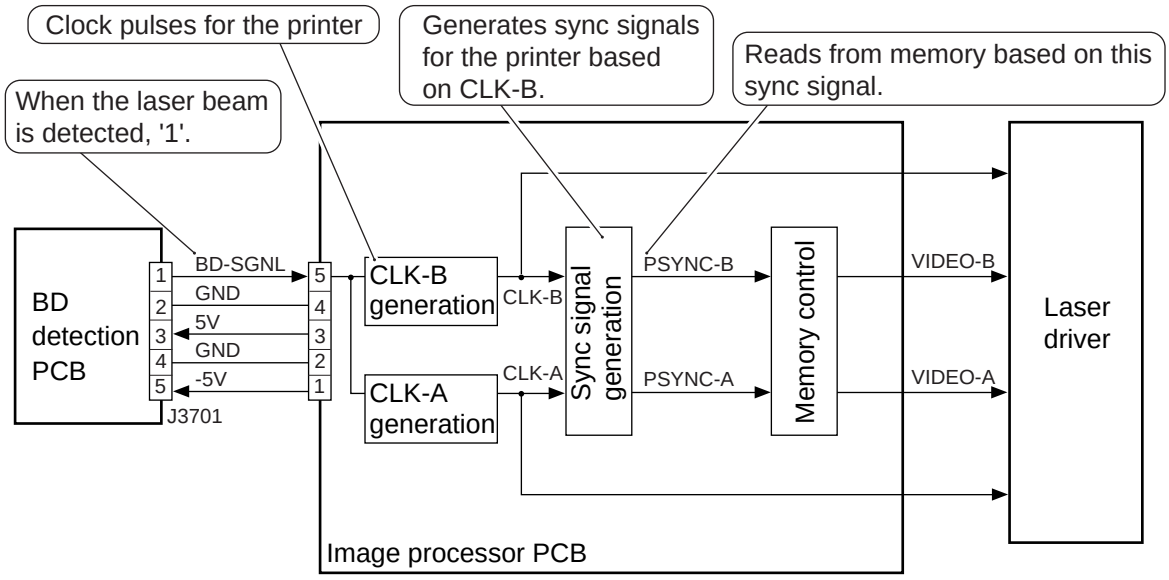
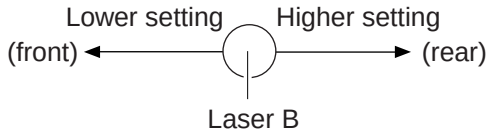


Figure 5-202 Flow of Signals

Related Service Mode

COPIER>ADJUST>LASER>PVE-OFST (laser projection position adjustment)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the adjustment value. Setting range: -300 to 300  Note that the laser A move in sync with the laser B.

Related Error Code

E100 (BD error)	[1] If the BD signal is not detected within a specific period of time. [2] See the descriptions under III.C "Controlling the Laser Intensity."

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III . LASER DRIVER PCB

A. Outline

Figure 5-301 shows items of control related to the laser driver circuit:
[1] Turning on and off the laser.
[2] Controlling the intensity of the laser.

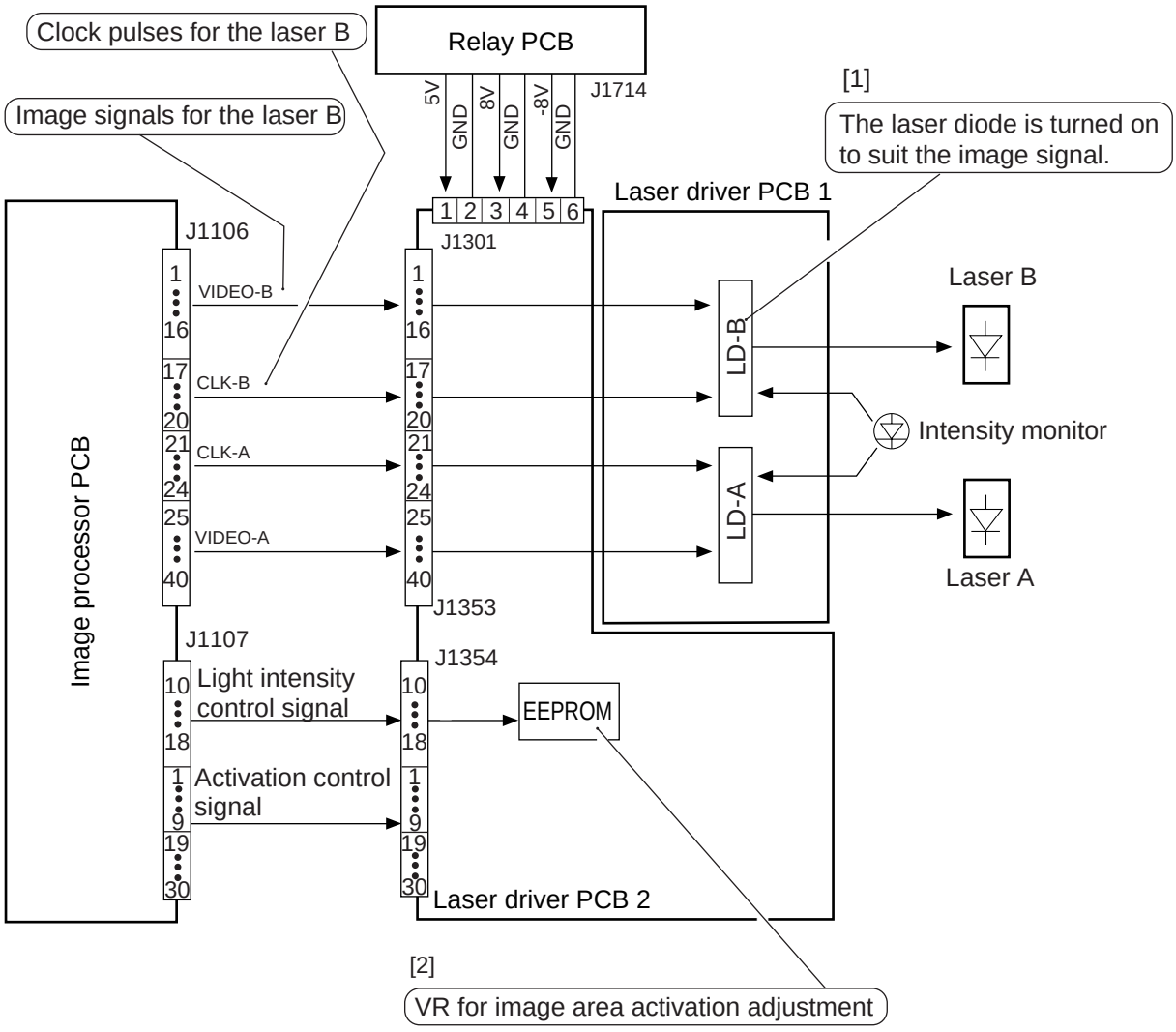


Figure 5-301 Function Construction

B. Controlling Laser Activation

Figure 5-301B shows the construction of the system used to control laser activation.

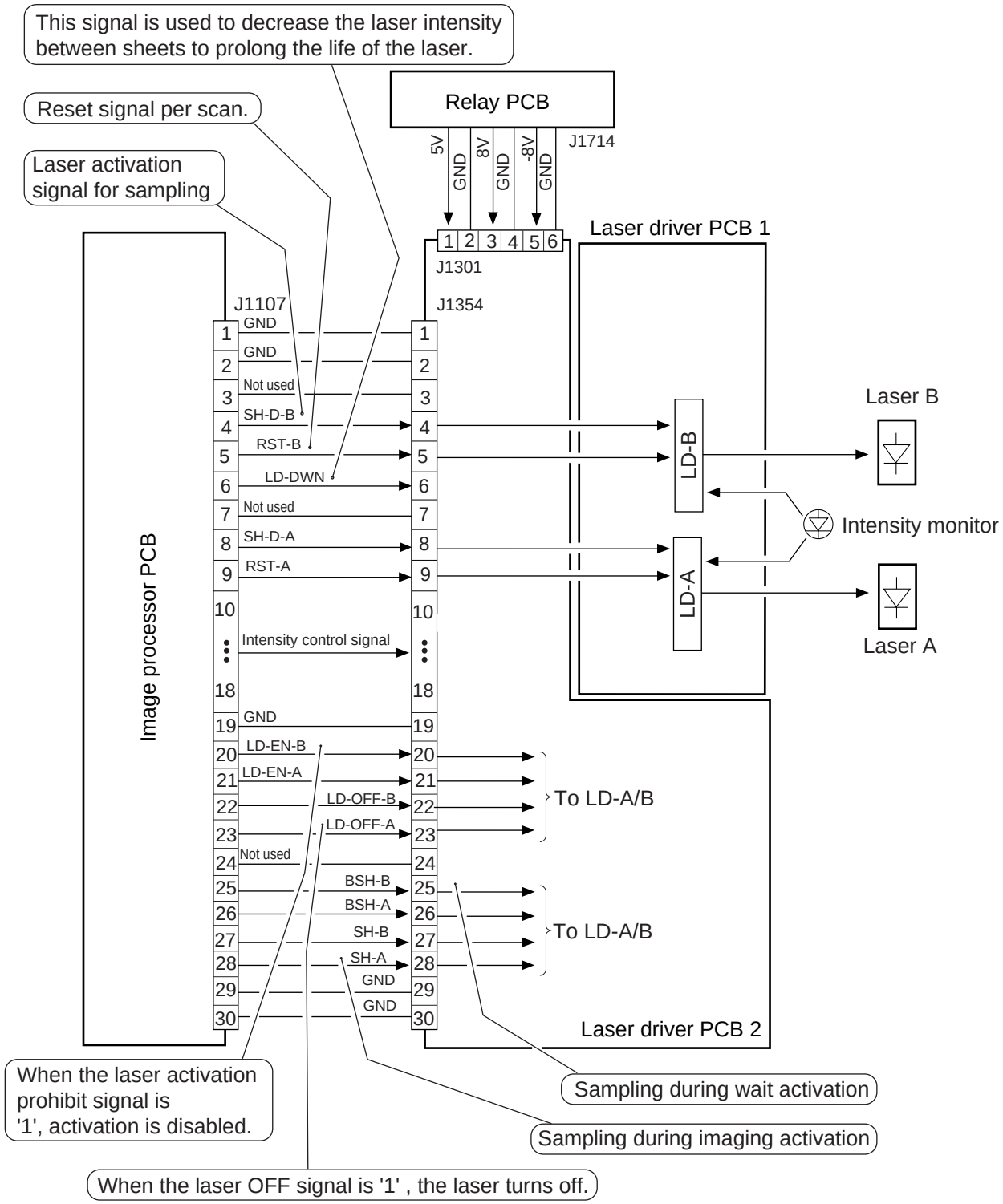


Figure 5-301B Construction of the Control System

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Related Service Mode

COPIER>ADJUST>LASER>LA-PWR-A,B (laser power adjustment input)	If you have replaced the laser unit or the IP PCB, or initialized the RAM on the IP PCB, enter the value recorded on the label attached to the laser unit.
COPIER>FUNCTION>LASER>POWER-A,B (laser power adjustment activation)	Use this mode to turn on the laser when checking laser activation.

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C. Controlling the Laser Intensity

The laser is controlled for the following:

[1] Laser power auto control (APC control).

[2] Intensity control to suit the surface potential of the drum.

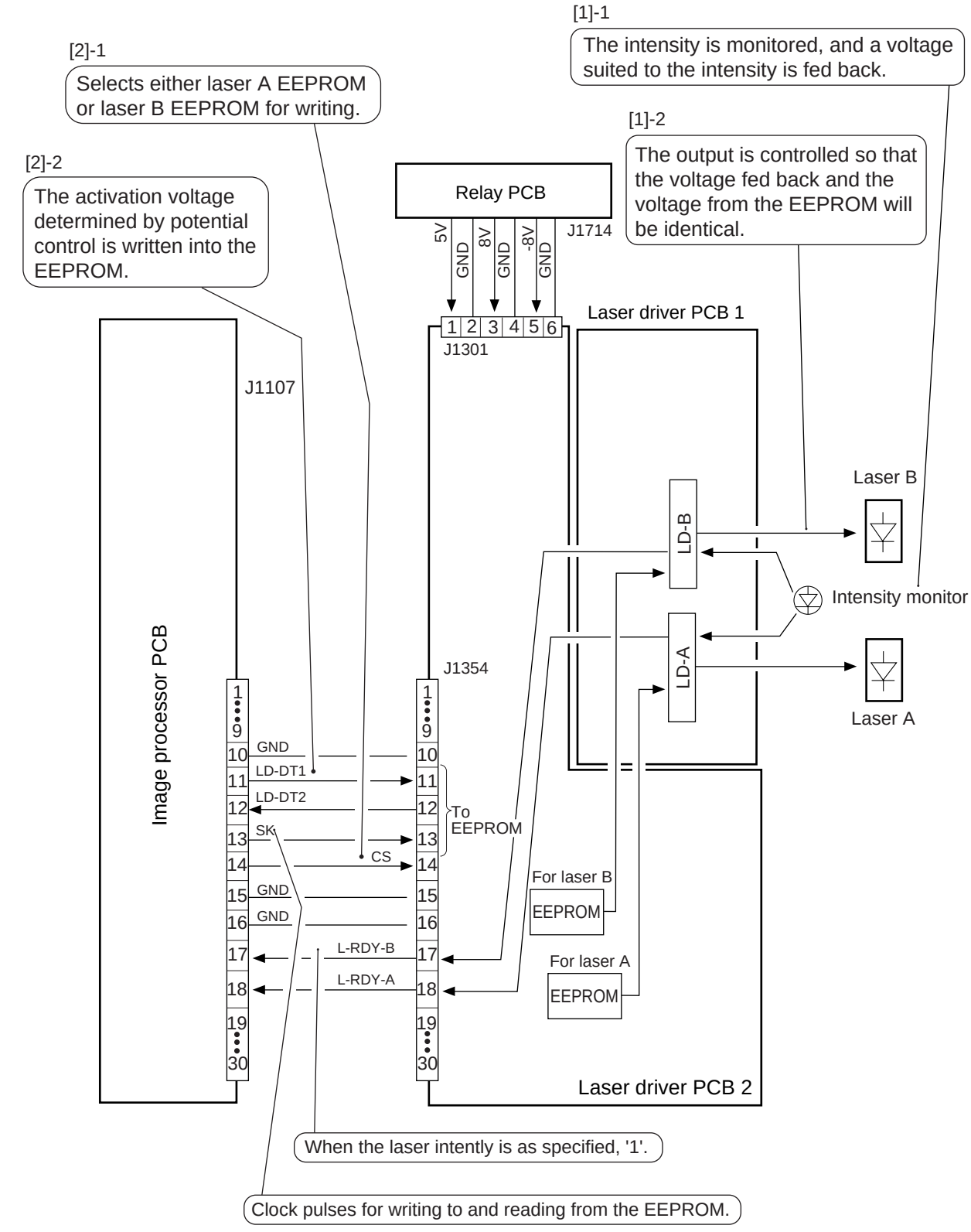


Figure 5-302 Functional Block Diagram

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Related Error Code

E102 (EEPROM write error)	The value (LD-DT1) written to the EEPROM and the value read (LD-DT2) do not match.

E100 (laser intensity error)	[1] See the descriptions under II. "Generating the BD Signal." [2] The intensity of the laser fails to reach a specific level.

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IV . CONTROLLING THE LASER SCANNER MOTOR

A. Outline

The laser scanner motor is controlled for the following:

[1] Constant speed rotation control
[2] Full-speed/wait rotation switching

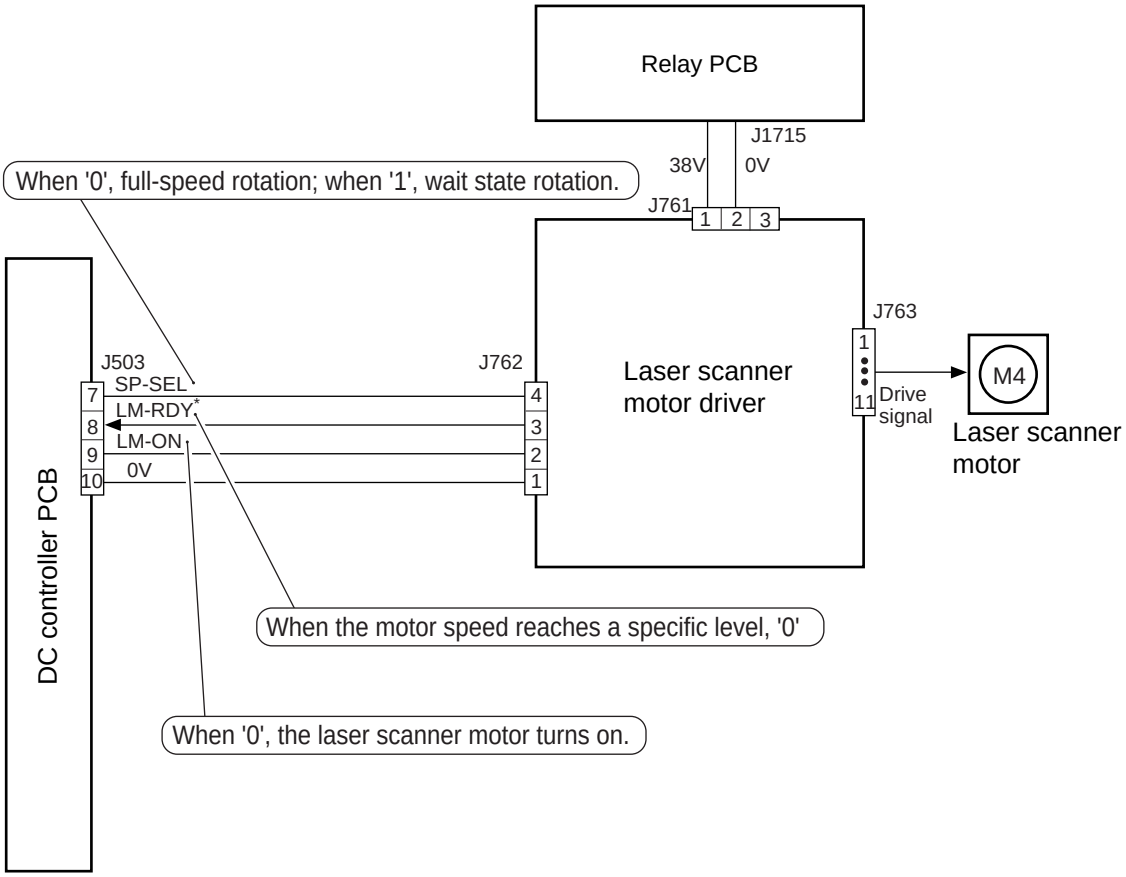


Figure 5-401 Functional Block Diagram

Related error code

E110 (laser scanner rotation speed error)	[1] LM-RDY* goes '1' when the motor is rotating (i.e., when LM-ON is '0'). [2] LM-RDY* does not go '0' within a specific period of time.

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V . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. Laser Unit

1. Removing the Laser Unit

1) Remove the copyboard glass.
2) Move the No. 1 mirror mount to the left end.
3) Remove the original sensor unit (rear). (See Figure 4-B401.)
4) Remove the CCD unit. (See Figure 4-A403.)
5) Remove the image processor PCB. (See Figure 4-B404.)
6) Remove the screw [1], and detach the image processor PCB support plate [2].

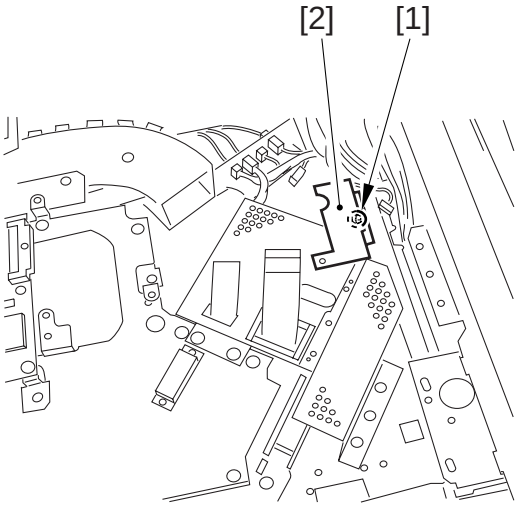


Figure 5-A501

7) Remove the six screws [3], and detach the laser driver PCB cover [4].

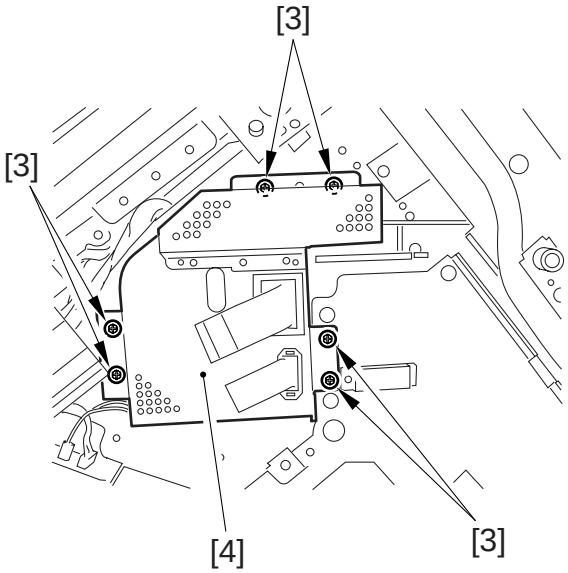


Figure 5-A502

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8) Remove the three screws [5], and detach the original orientation detection PCB [6].

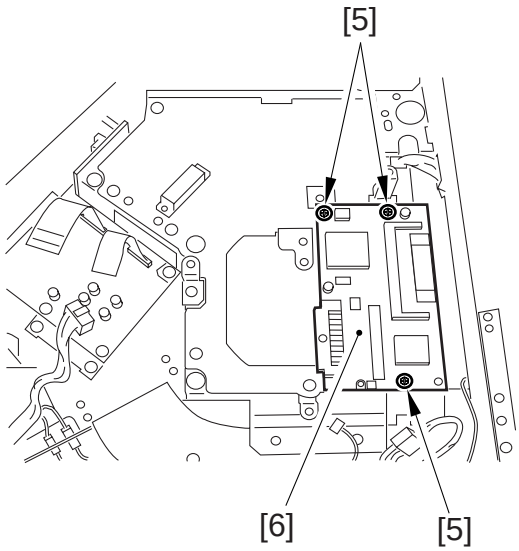


Figure 5-A503

9) Remove the eight screws [7], and disconnect the three connectors [8]; then, detach the laser scanner unit [9].

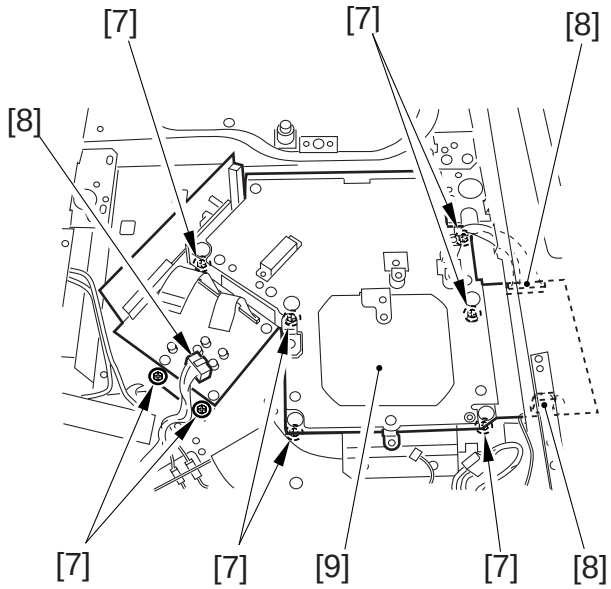


Figure 5-A504

2. After Replacing the Laser Unit

See F. "Laser Exposure System" under II. in Chapter 13.

B. BD Unit

1. Removing the BD Unit

1) Open the front cover.
2) Slide out the process unit. (See Figures 6-D701 through -D702.)
3) Remove the three screws [1], and disconnect the seven connectors [2]; then, remove the fan (primary charging, scanner cooling, polygon mirror) unit [3].

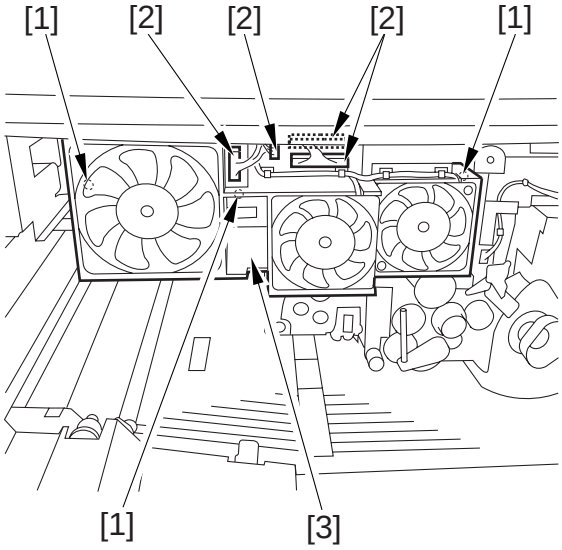


Figure 5-B501

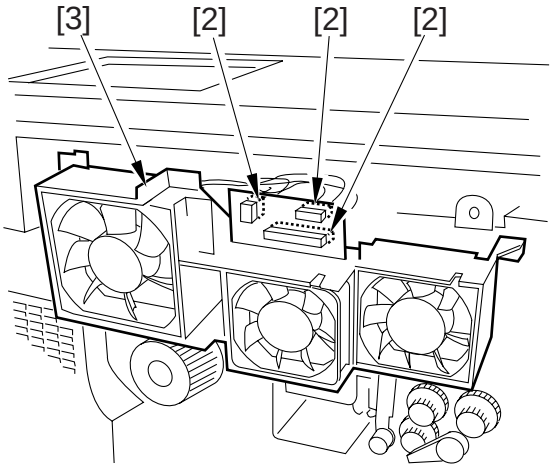


Figure 5-B502

4) Remove the screws [4], and slide out the BD unit [5] to the front.

Caution:
Be sure to mark the position of the screw [4] with a scriber before loosening it.

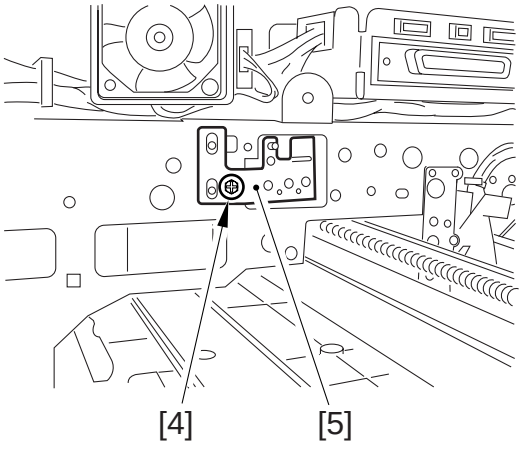


Figure 5-B503

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5) Disconnect the connector [6], and remove the BD unit.

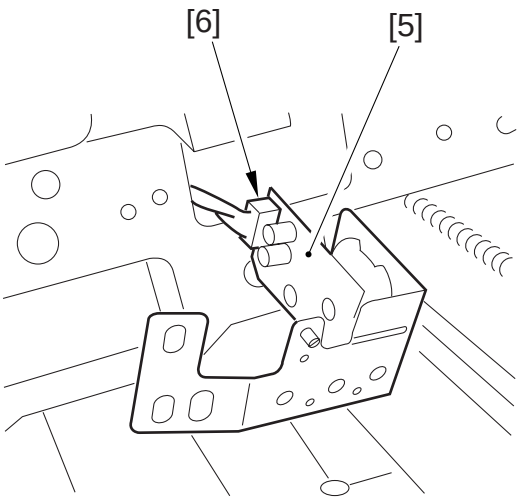


Figure 5-B504

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CHAPTER 6

IMAGE FORMATION SYSTEM

This chapter provides descriptions on the copier's image processing operations, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

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I . PROCESSES

A. Outline

Table 6-101 shows the major functions of the image formation system.

Item	Pre-exposure
Pre-exposure	LED array (64 LEDs) ON/OFF control
Primary charging	DC constant current control (switched among 3 settings in service mode)
Grid bias	DC constant voltage control (determined by potential control)
Developing bias	AC constant voltage control (ON/OFF control only) DC constant voltage control (determined by potential control)
Dust-collecting roller bias	DC constant voltage control (ON/OFF control only; +1000 V)
Pre-transfer charging	AC constant current control (fuzzy control by an environment sensor) DC constant voltage control
Transfer guide bias control	DC constant voltage control (switched according to temperature/humidity)
Transfer charging	DC constant current control (fuzzy control by an environment sensor)
Separation charging	DC constant current control (fuzzy control by an environment sensor and toner deposit) AC constant voltage control
Potential	[1] Setting the optimum grid bias. [2] Setting the optimum laser output. [3] Setting the optimum developing bias (DC).
Wire auto cleaning	[1] Primary charging wire [2] Pre-transfer charging wire

Table 6-101 Major Functions

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Figure 6-101 shows the major components of the image formation system.

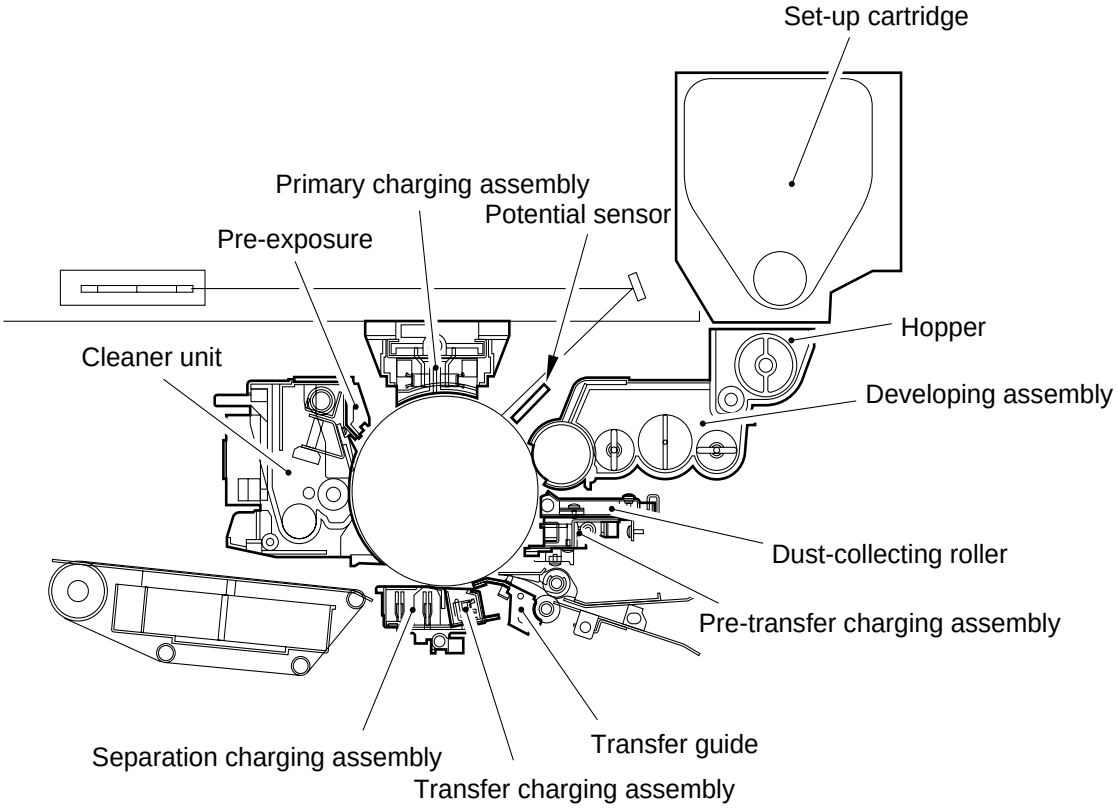


Figure 6-101 (cross section)

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B. Basic Sequence of Operations (image formation)

Copying, 1 Original, 2 Prints

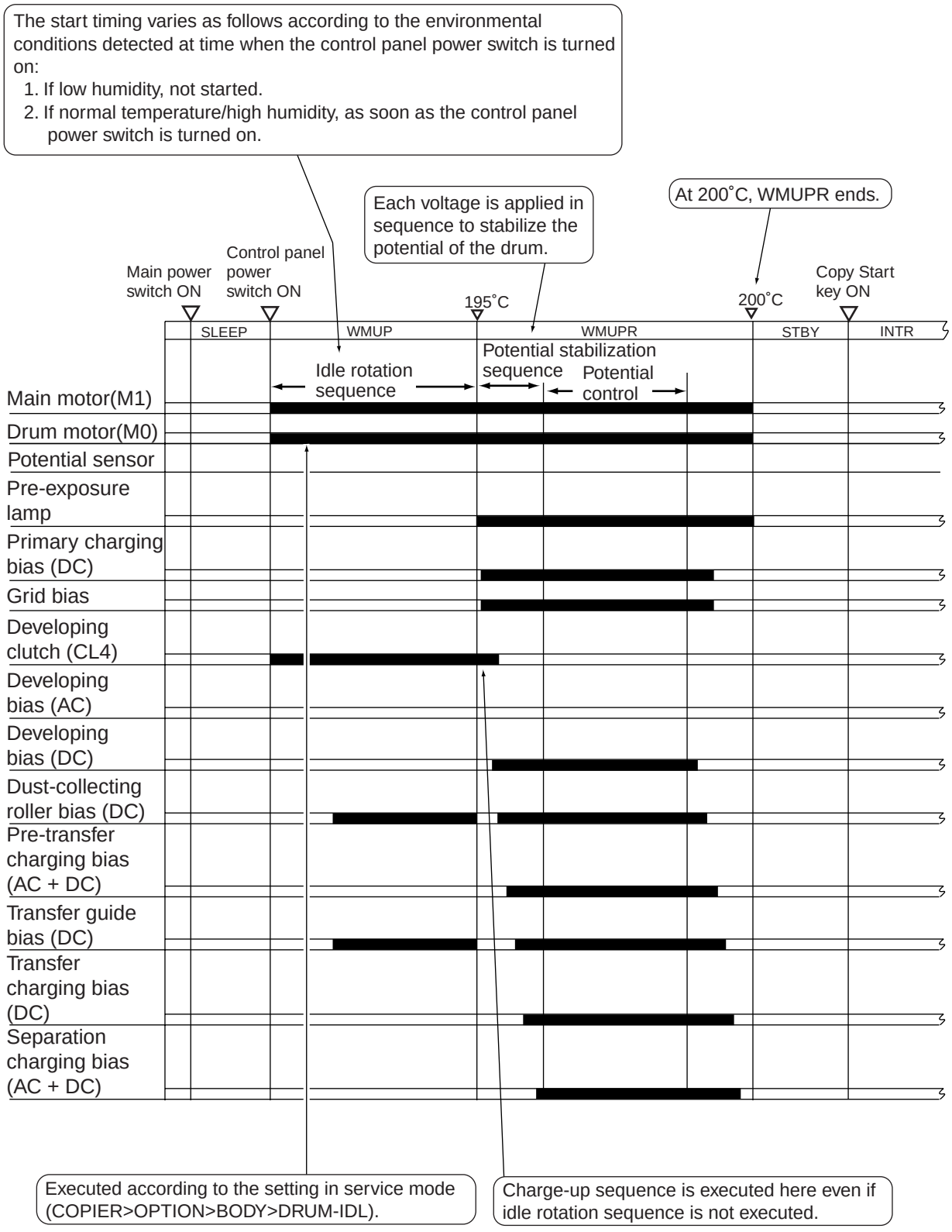

The start timing varies as follows according to the environmental conditions detected at time when the control panel power switch is turned on:
1. If low humidity, not started.
2. If normal temperature/high humidity, as soon as the control panel power switch is turned on.
Each voltage is applied in sequence to stabilize the potential of the drum.
At 200˚C, WMUPR ends.
Main power switch ON
Control panel power switch ON
195˚C
200˚C
Copy Start key ON
SLEEP
WMUP
WMUPR
STBY
INTR
Idle rotation sequence
Potential stabilization sequence
Potential control
Main motor(M1)
Drum motor(M0)
Potential sensor
Pre-exposure lamp
Primary charging bias (DC)
Grid bias
Developing clutch (CL4)
Developing bias (AC)
Developing bias (DC)
Dust-collecting roller bias (DC)
Pre-transfer charging bias (AC + DC)
Transfer guide bias (DC)
Transfer charging bias (DC)
Separation charging bias (AC + DC)
Executed according to the setting in service mode (COPIER>OPTION>BODY>DRUM-IDL).
Charge-up sequence is executed here even if idle rotation sequence is not executed.

Figure 6-102 At Power-On

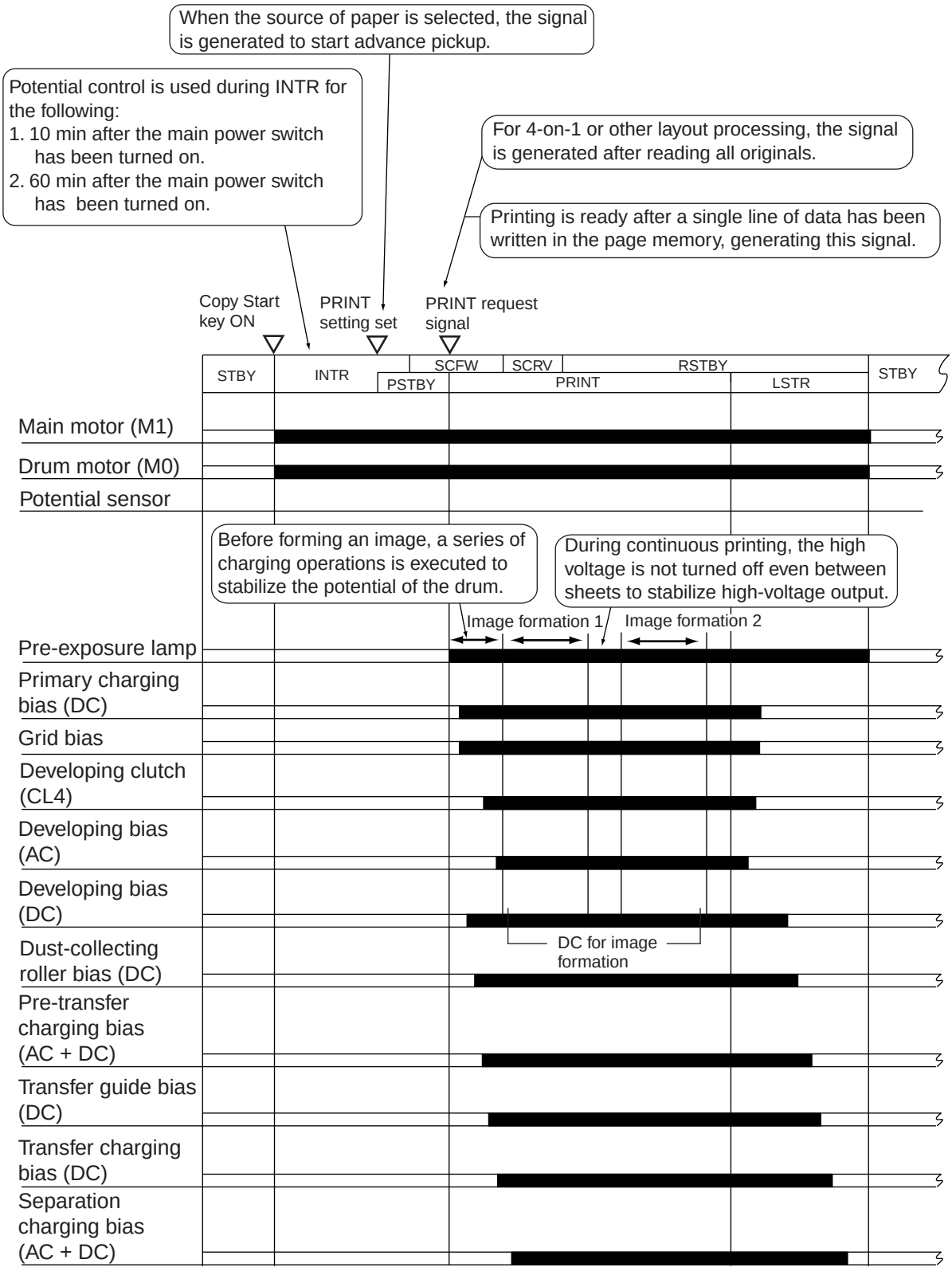

When the source of paper is selected, the signal is generated to start advance pickup.
Potential control is used during INTR for the following:
1. 10 min after the main power switch has been turned on.
2. 60 min after the main power switch has been turned on.
For 4-on-1 or other layout processing, the signal is generated after reading all originals.
Printing is ready after a single line of data has been written in the page memory, generating this signal.
Copy Start key ON
PRINT setting set
PRINT request signal
STBY
INTR
PSTBY
SCFW
SCRV
PRINT
RSTBY
LSTR
STBY
Main motor (M1)
Drum motor (M0)
Potential sensor
Before forming an image, a series of charging operations is executed to stabilize the potential of the drum.
During continuous printing, the high voltage is not turned off even between sheets to stabilize high-voltage output.
Image formation 1
Image formation 2
Pre-exposure lamp
Primary charging bias (DC)
Grid bias
Developing clutch (CL4)
Developing bias (AC)
Developing bias (DC)
DC for image formation
Dust-collecting roller bias (DC)
Pre-transfer charging bias (AC + DC)
Transfer guide bias (DC)
Transfer charging bias (DC)
Separation charging bias (AC + DC)

Figure 6-103 Basic Sequence of Operations (Printing)

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II . POTENTIAL CONTROL

A. Outline

📖 Volume 2>Chapter 4>I.B. "Controlling the Surface Potential of the Drum"

The potential is controlled for the following:
[1] Determining the optimum grid bias. (VD control)
[2] Determining the optimum laser output. (VL control)
[3] Determining the optimum developing bias (DC). (Vdc control)

Figure 6-201 shows the construction of the control system:

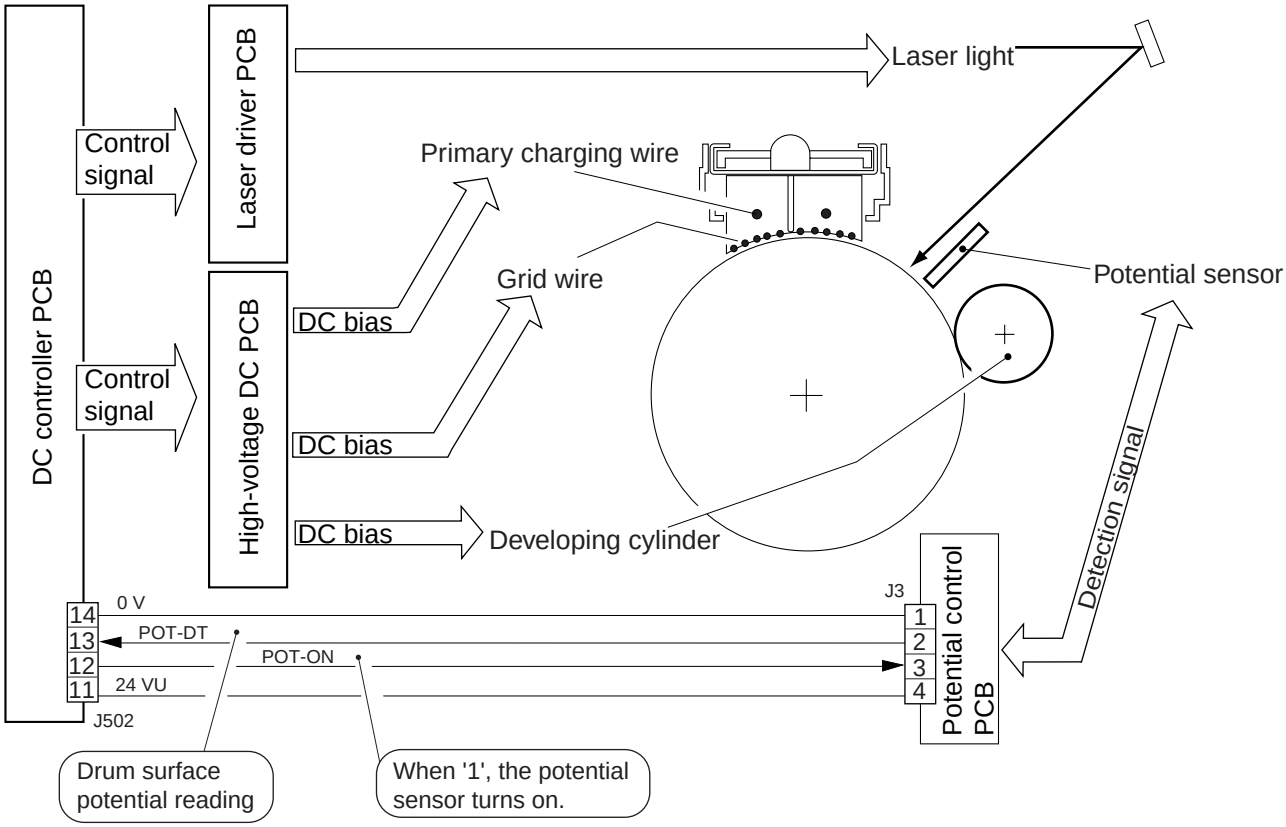


Figure 6-201 Construction of the Control System

Figure 6-202 shows the basic sequence (timing) of operations related to potential control.

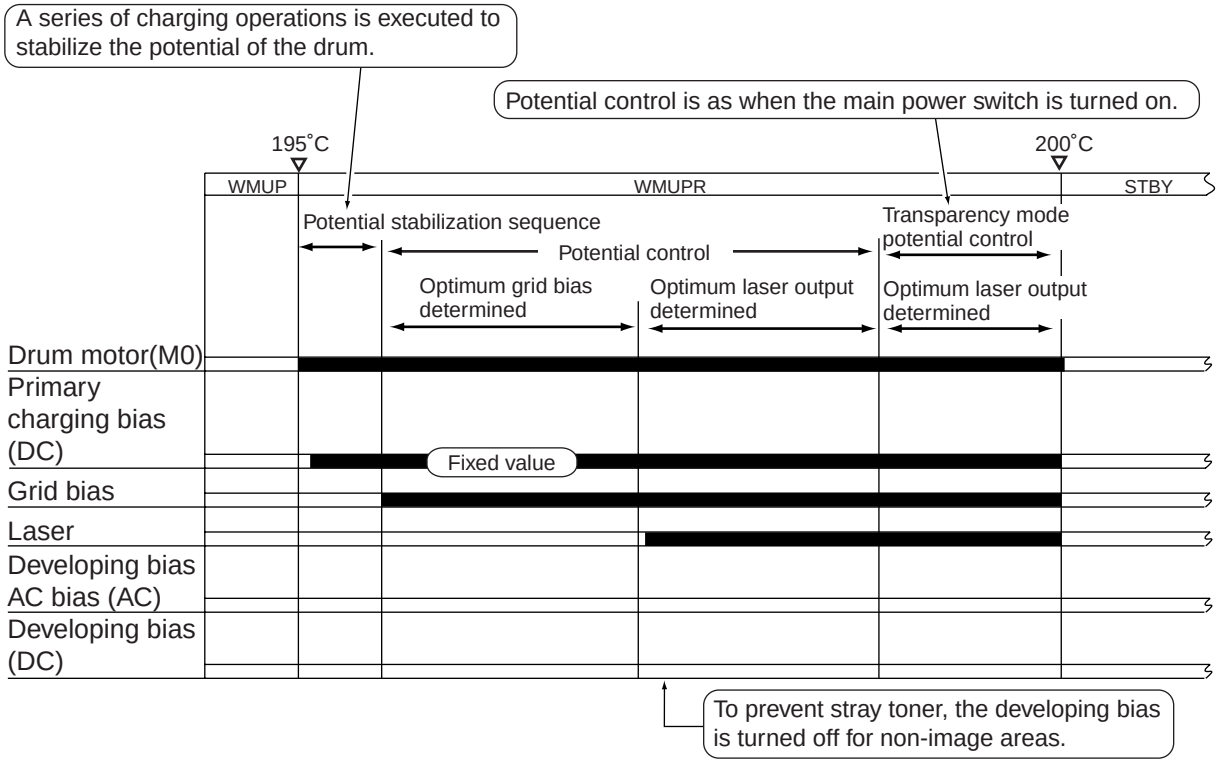

A series of charging operations is executed to stabilize the potential of the drum.
Potential control is as when the main power switch is turned on.
195˚C
200˚C
WMUP
WMUPR
STBY
Potential stabilization sequence
Potential control
Transparency mode potential control
Optimum grid bias determined
Optimum laser output determined
Optimum laser output determined
Drum motor(M0)
Primary charging bias (DC)
Fixed value
Grid bias
Laser
Developing bias AC bias (AC)
Developing bias (DC)
To prevent stray toner, the developing bias is turned off for non-image areas.

Figure 6-202 Basic Sequence of Operations (potential control)

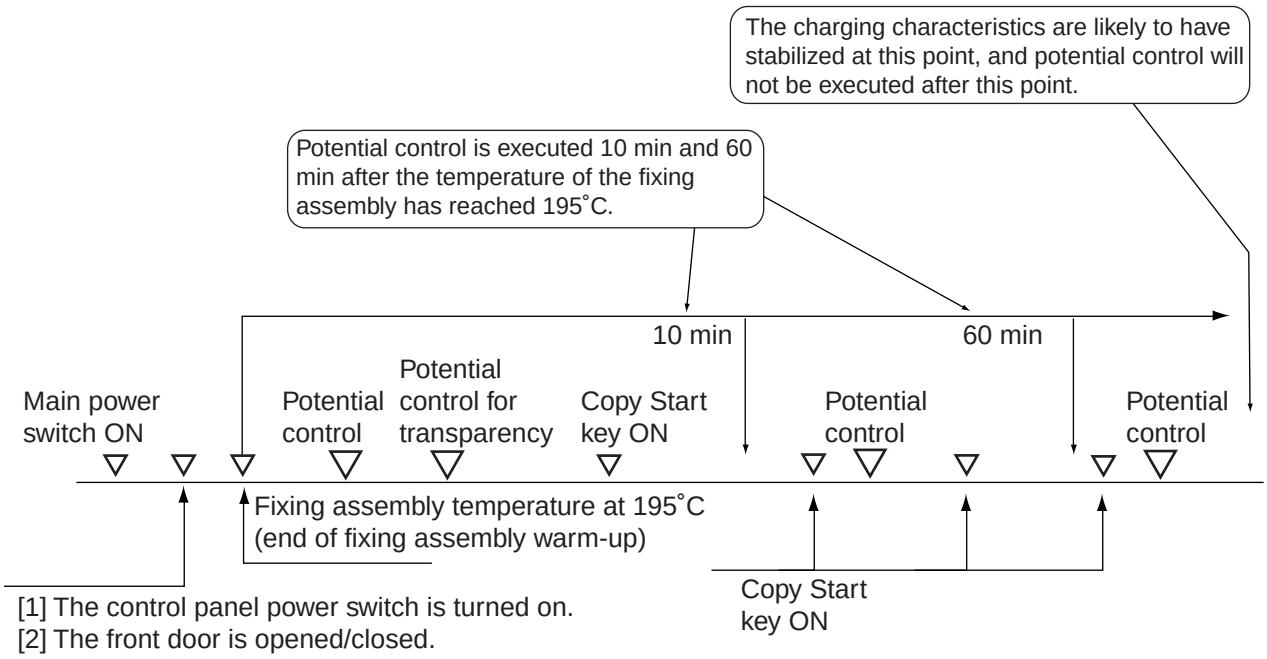

The charging characteristics are likely to have stabilized at this point, and potential control will not be executed after this point.
Potential control is executed 10 min and 60 min after the temperature of the fixing assembly has reached 195˚C.
10 min
60 min
Main power switch ON
Potential control
Potential control for transparency
Copy Start key ON
Potential control
Potential control
Fixing assembly temperature at 195˚C (end of fixing assembly warm-up)
Copy Start key ON
[1] The control panel power switch is turned on.
[2] The front door is opened/closed.

Figure 6-203 Timing of Potential Control Operations

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Related Service Mode

COPIER>OPTION>BODY>PO-CNT (potential control on/off)	0: disable potential control. 1: enable potential control. (default)

COPIER>ADJUST>V-CONT>EPOTOFST (potential sensor offset value input)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the value recorded on the service label.
COPIER>ADJUST>V-CONT>VL-OFST (VL target potential offset input)	
COPIER>ADJUST>V-CONT>VD-OFST (VD target potential offset value input)	

COPIER>FUNCTION>DPC>OFST (potential sensor offset adjustment)	For adjustments, see descriptions on electrical parts in Chapter 13>II. "Standards and Adjustments."

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B. Determining the Optimum Grid Bias

A grid bias is selected so that the surface potential of the drum will be identical to the target potential (the primary charging bias is fixed).

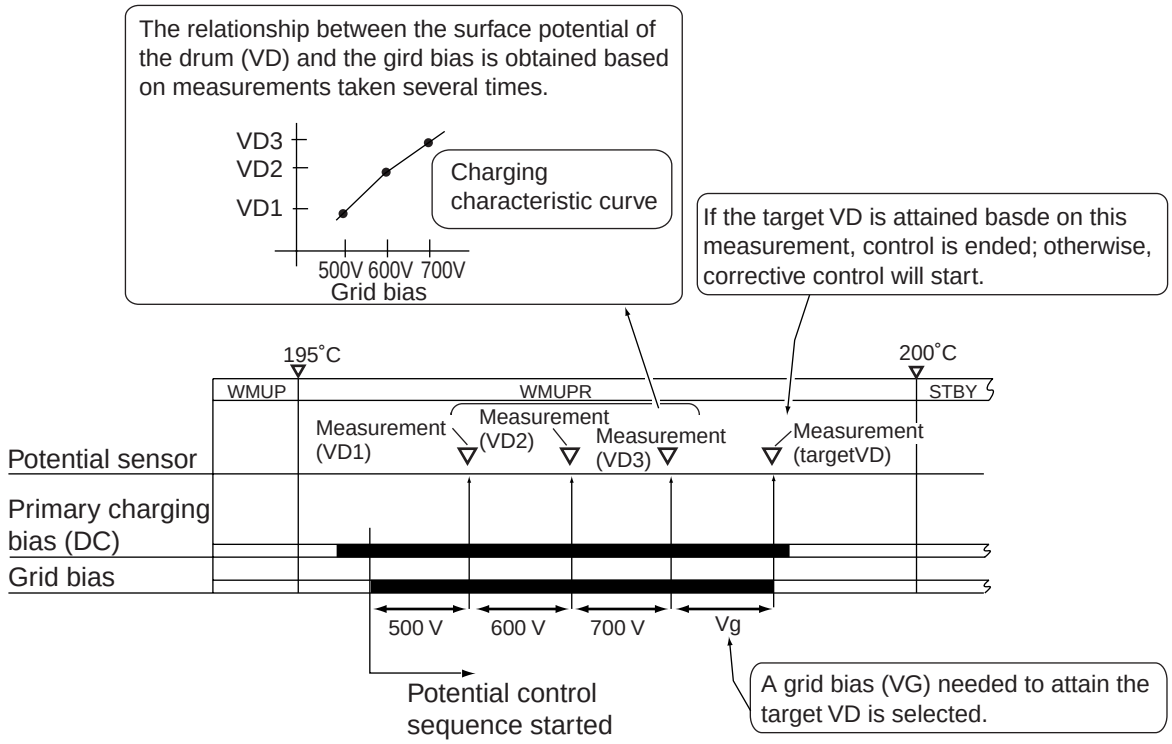


Figure 6-204 Sequence of Operations

C. Grid Bias Corrective Control

If an optimum grid bias cannot be selected after measuring the surface potential of the drum several times, a corrective control sequence is started to determine the optimum grid bias.

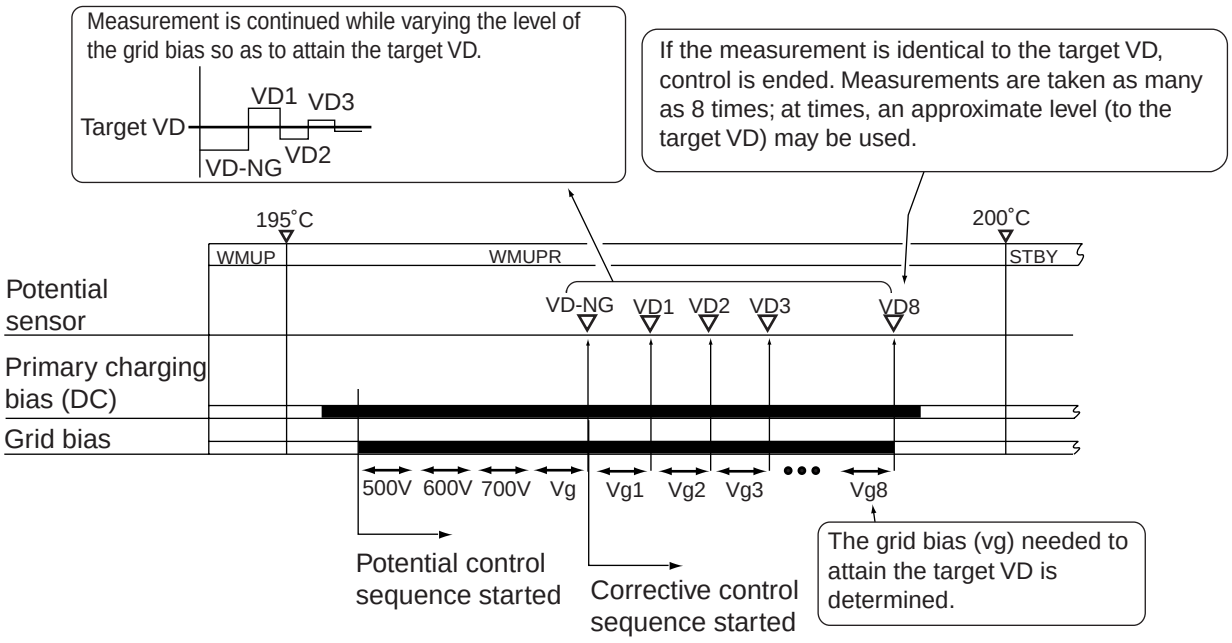


Figure 6-205 Sequence of Operations (corrective control)

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D. Determining the Optimum Laser Output

The laser output is determined so that the surface potential (light area potential VL) of the drum at time of laser exposure will be identical to the target potential.

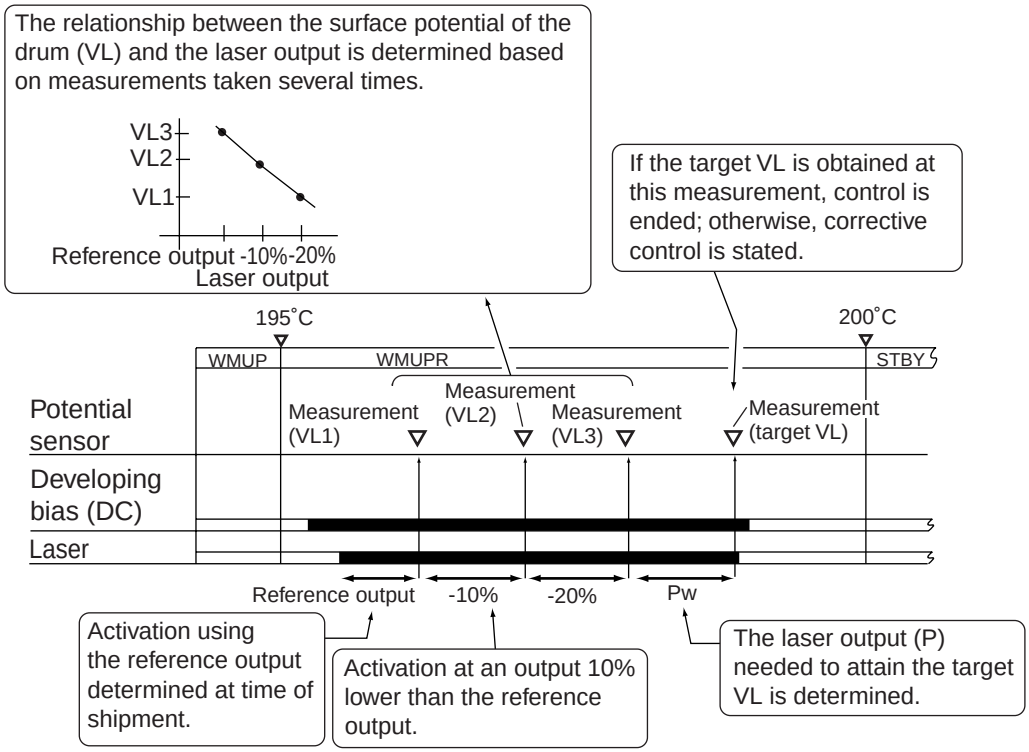

The relationship between the surface potential of the drum (VL) and the laser output is determined based on measurements taken several times.
VL3
VL2
VL1
Reference output -10%-20%
Laser output
If the target VL is obtained at this measurement, control is ended; otherwise, corrective control is stated.
195˚C
200˚C
WMUP
WMUPR
STBY
Measurement (VL1)
Measurement (VL2)
Measurement (VL3)
Measurement (target VL)
Potential sensor
Developing bias (DC)
Laser
Reference output
-10%
-20%
Pw
Activation using the reference output determined at time of shipment.
Activation at an output 10% lower than the reference output.
The laser output (P) needed to attain the target VL is determined.

Figure 6-206 Sequence of Operations

E. Laser Output Corrective Control

If an optimum laser output cannot be selected after measuring the surface potential of the drum several times, a corrective control sequence is started to determine the optimum laser output.

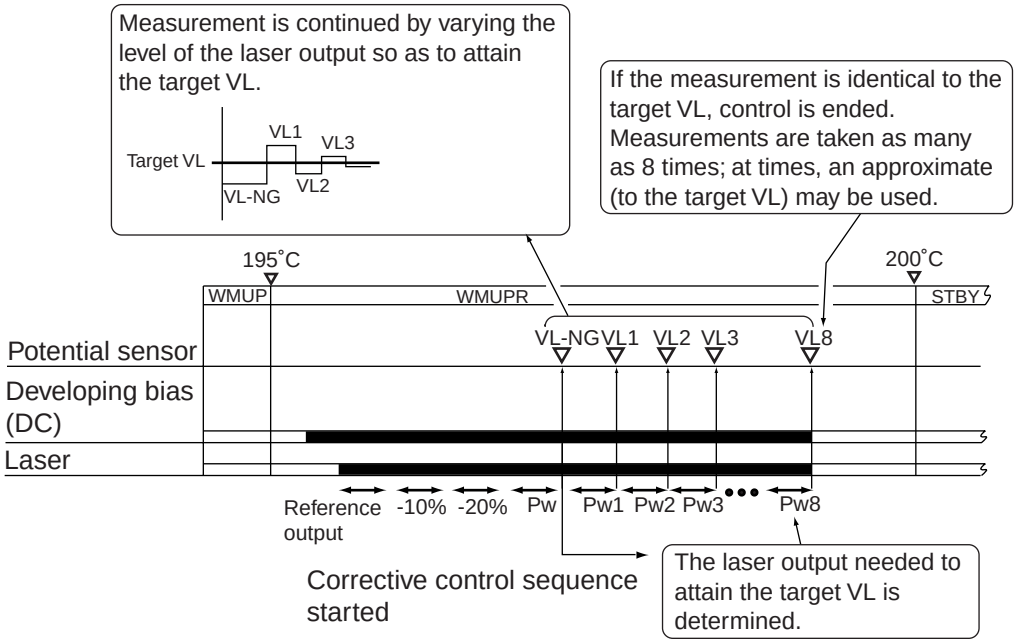


Figure 6-207 Sequence of Operations (corrective control)

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F. Determining the Optimum Developing Bias

An optimum developing bias (Vdc) is computed based on the optimum drum surface potential (VD).

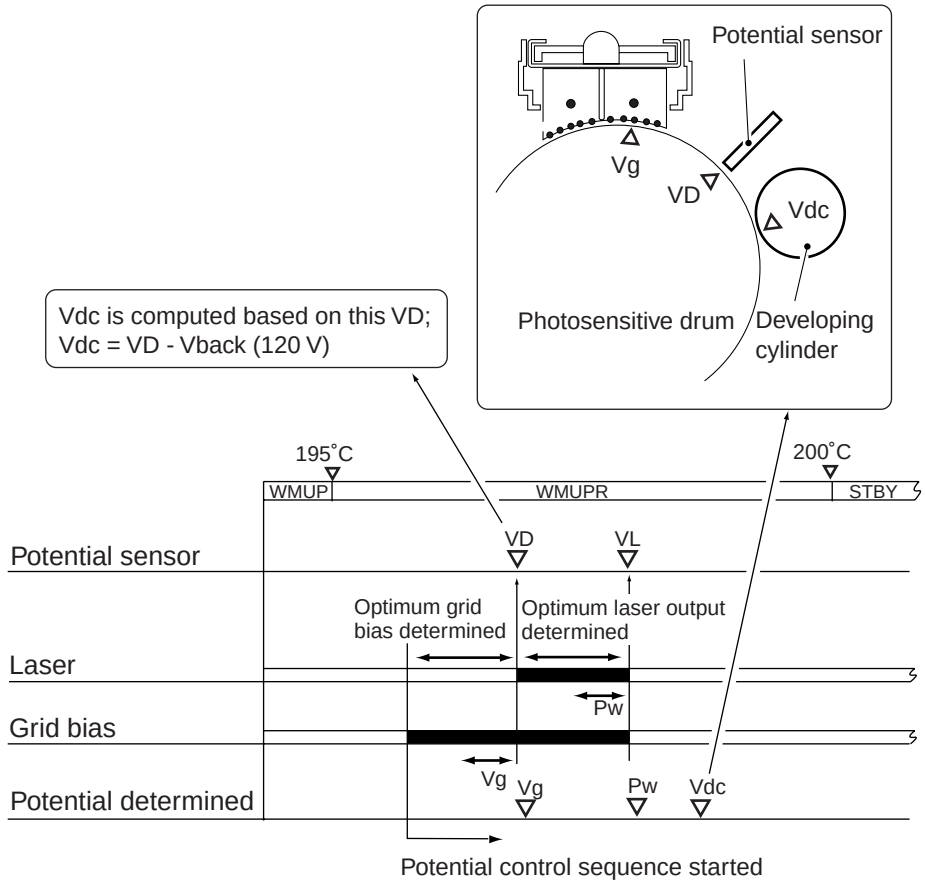


Figure 6-208 Sequence of Operations

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G. Potential Control for Transparency Mode

To prevent detachment of toner in high density areas on transparencies, the contrast is decreased to limit the amount of toner deposit. To enable the decrease in contrast, potential control for transparency mode is executed to select a target value.

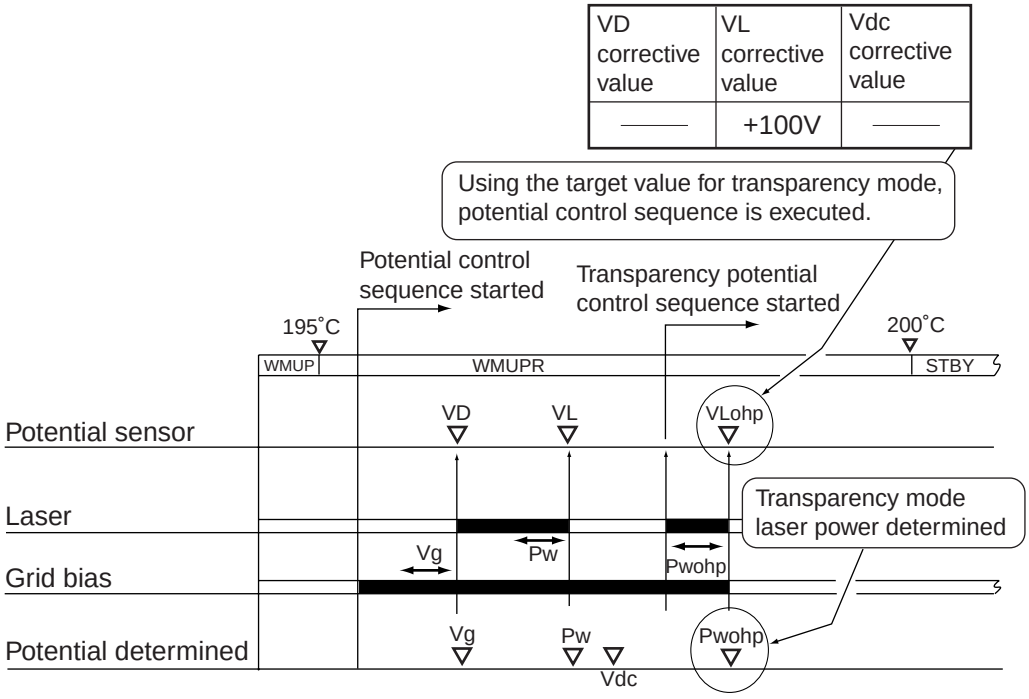


Figure 6-209 Sequence of Operations

Related Service Mode

COPIER>OPTION>BODY> OHP-CNT (transparency mode potential control ON/OFF)	1: use the target value obtained for transparency mode potential control during transparency mode operation. (default) 0: disable potential control for transparency mode.

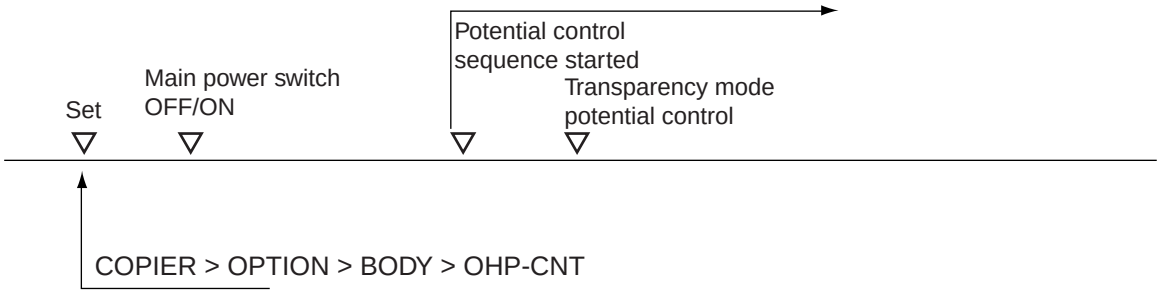

Potential control sequence started
Transparency mode potential control
Main power switch OFF/ON
Set
COPIER > OPTION > BODY > OHP-CNT

Figure 6-210 Timing of Control

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H. Target Potential Correction in Each Mode

The laser power/developing bias determined in relation to potential control is corrected for the following operating mode, and the result is used as the target value specific to each:

	Purpose	Correction
Density adjustment during printing (PDL input)	To enable reproduction of fine lines (PDL data from a computer) to suit the needs of the user.	Correct the laser power/developing bias according to the F setting.
Density correction during printing (scanner input)	To attain density levels suited to the needs of the user.	Corrects the laser power/developing bias according to the F setting.
During operation in high humidity mode	To prevent decreases in density (caused by a lower developing efficiency because of moist toner or a lower transfer efficiency caused by moist paper).	Corrects the laser power/developing bias according to the environment.

Table 6-201 Operating Modes

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1. Adjusting the Density during Printing (PDL input)

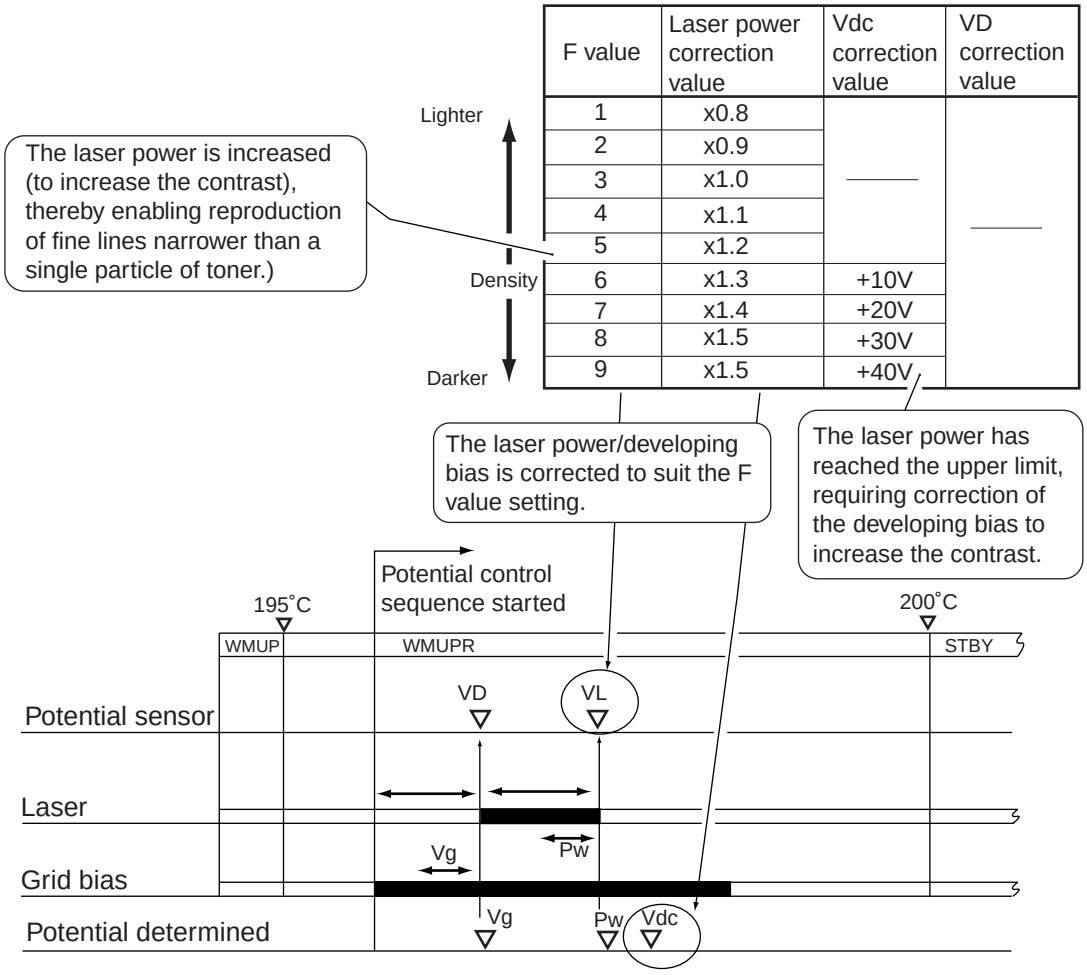


Figure 6-211 Sequence of Operations

Related Service Mode

COPIER>OPTION>BODY> CNT-W/PR (density setting mode on/off during printing)	1: correct the target value to enable variation of density during printing. (default) 0: disable the mechanism used to vary the density during printing.

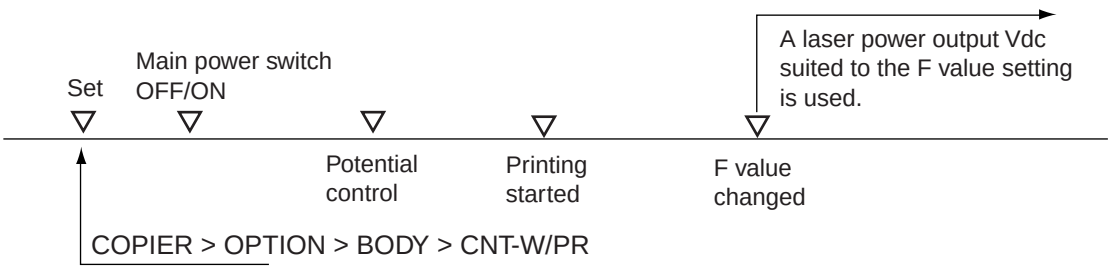

Set
Main power switch OFF/ON
Potential control
Printing started
F value changed
A laser power output Vdc suited to the F value setting is used.
COPIER > OPTION > BODY > CNT-W/PR

Table 6-202 Timing of Control

2. Potential Control during High Humidity Mode

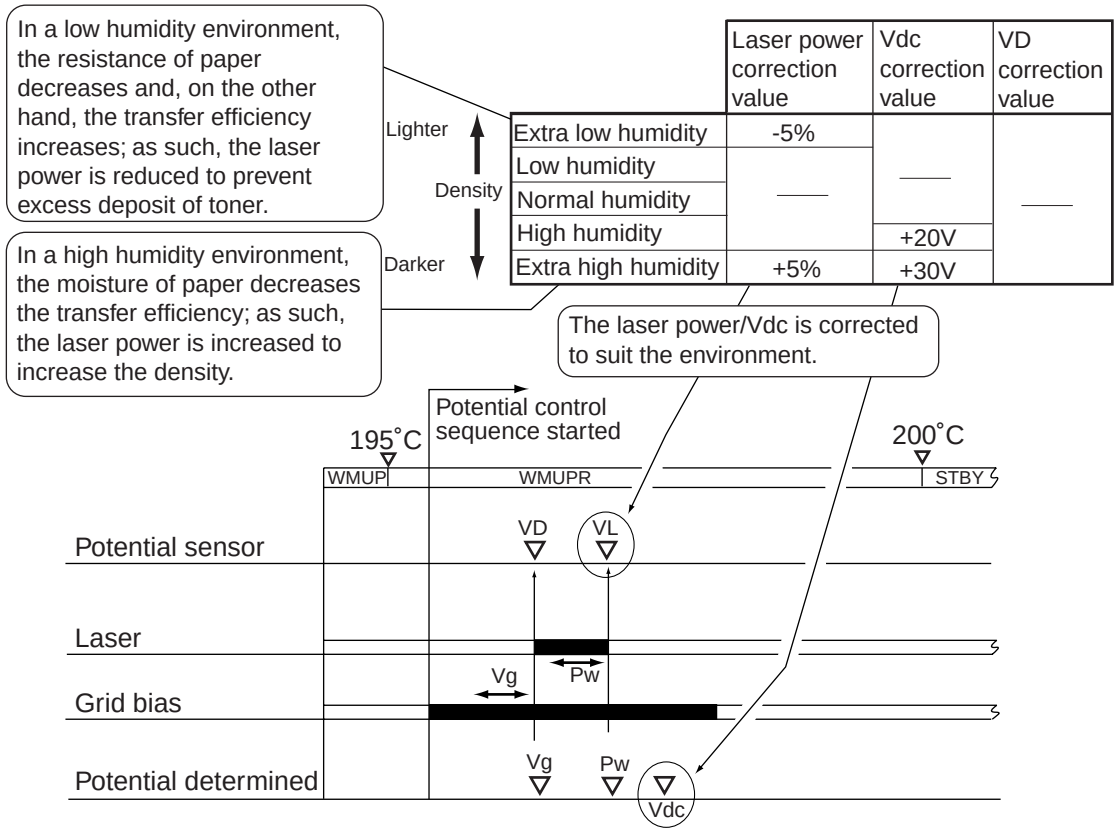


Figure 6-212 Sequence of Operations

Related Service Mode

COPIER>OPTION>BODY> CNT-W/HM (high humidity mode potential control setting)	1: correct the laser power/developing bias to suit the environment (default) 0: disable correction of the target value 2: extra low humidity mode (See the above figure.) 3: low humidity mode (See the above figure.) 4: normal humidity mode (See the above figure.) 5: high humidity mode (See the above figure.) 6: extra high humidity mode (See the above figure.) 7: laser power corrective value +15% Vdc correction value +40 V VD correction value 0 V

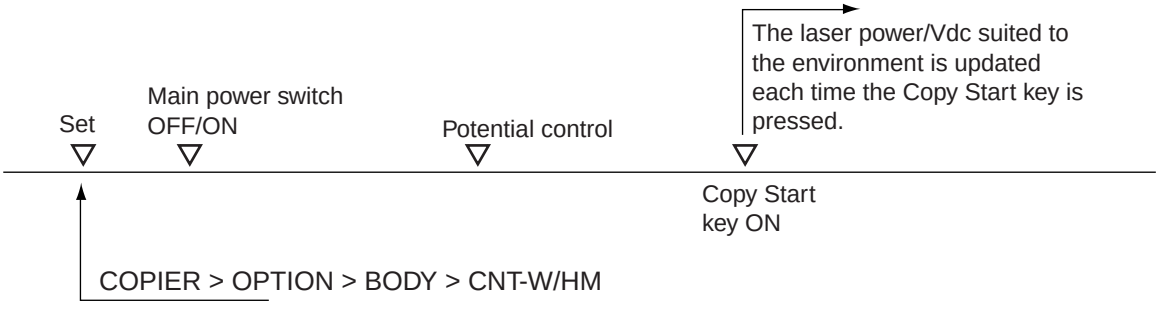

The laser power/Vdc suited to the environment is updated each time the Copy Start key is pressed.
Main power switch OFF/ON
Set
Potential control
Copy Start key ON
COPIER > OPTION > BODY > CNT-W/HM

Table 6-203 Timing of Control

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3. Density Adjustment during Printing (scanner input)

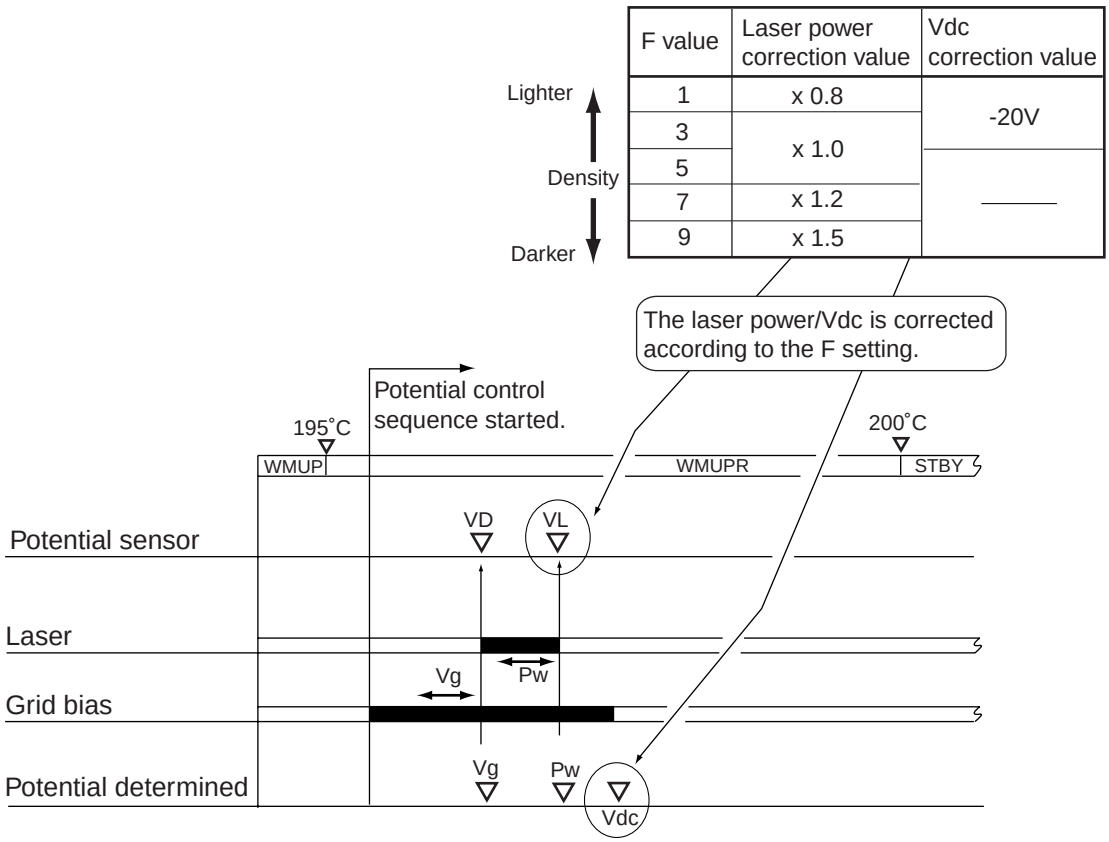


Figure 6-213 Sequence of Control

Related Service Mode

COPIER>OPTION>USER>PM-DENS (density setting mode on/off during printing)	1: correct the target value to enable variation of density during printing. (default) 0: disable the mechanism used to vary the density during printing.

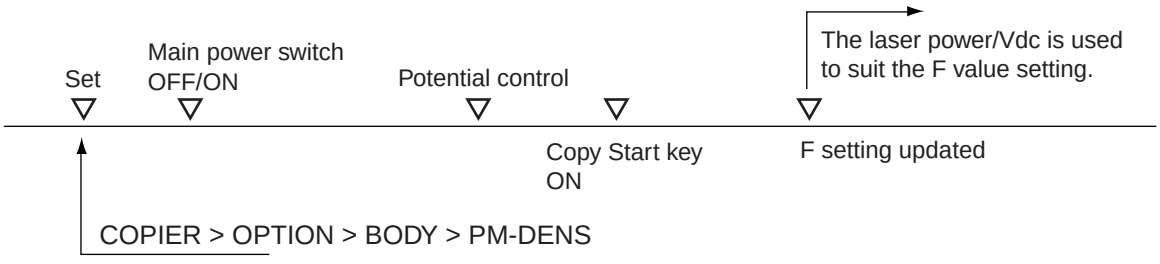

Set
Main power switch OFF/ON
Potential control
The laser power/Vdc is used to suit the F value setting.
Copy Start key ON
F setting updated
COPIER > OPTION > BODY > PM-DENS

Table 6-204 Timing of Control

III . CONTROLLING THE CHARGING MECHANISMS

A. Controlling the Primary Charging Mechanism

1. Outline

📖 Volume 2>Chapter 6>I.C. "Controlling the Primary Charging Current"

The primary charging mechanism is controlled for the following:
[1] Primary charging bias constant current
[2] Grid bias constant voltage

Figure 6-301 shows the construction of the primary charging control system.

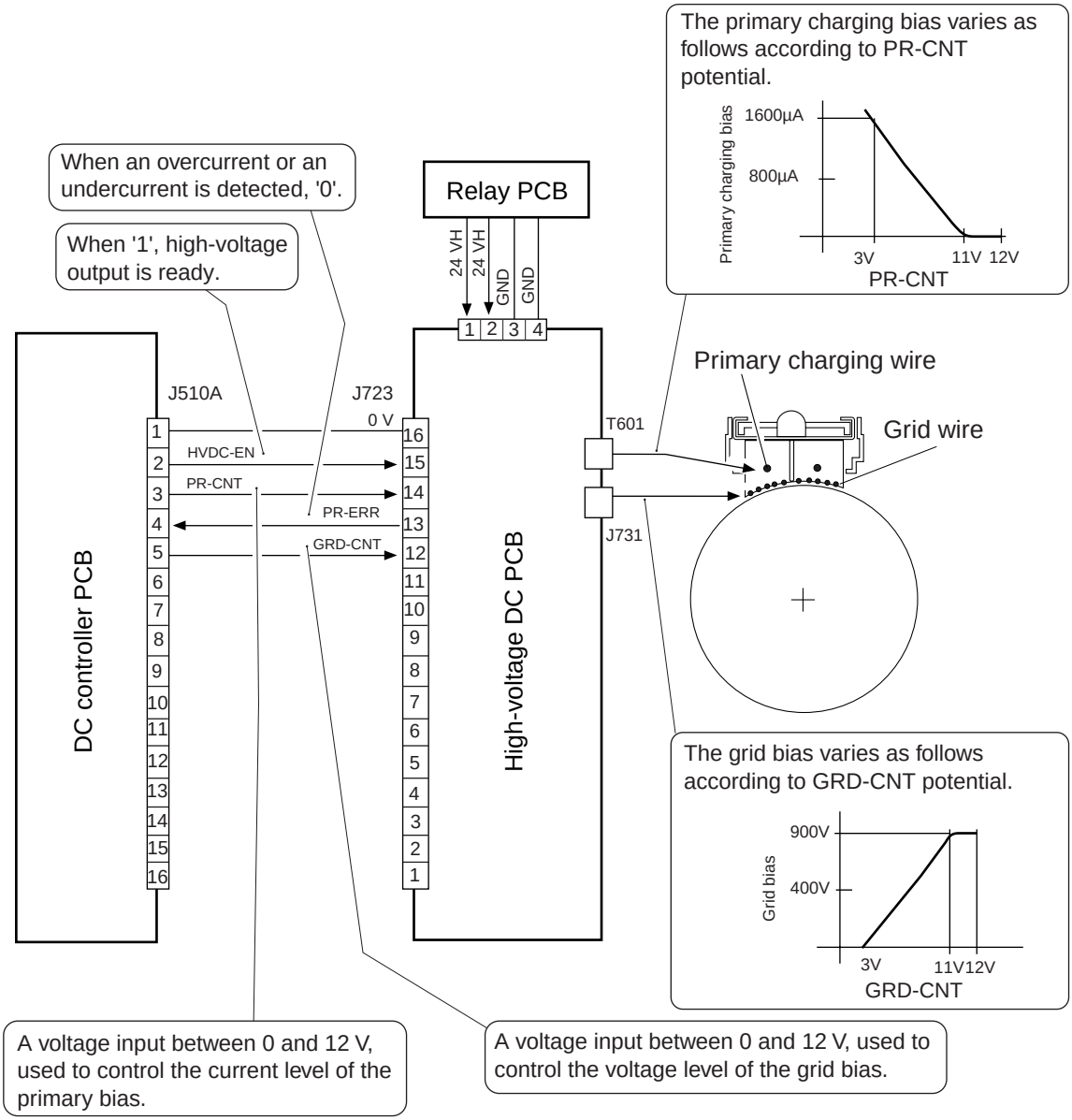


Figure 6-301 Construction of the Control System

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2. Changing the Primary Charging Level Setting

If uneven images occur, the primary charging level may be changed in service mode to suppress the problem.

	Setting	Primary charging current correction value (μA)	VD target value (v)	Grid bias (V)
Standard mode	0	———	400	600
Suppression mode 1	1	+300	400	550
Suppression mode 2	2	+600	400	400

A higher output suppresses unevenness.

A lower output suppresses uneven charging efficiency on the surface of the drum.

Table 6-301 Primary Charging Levels

Related Service Mode

COPIER>OPTION>BODY>PR-SEL (potential unevenness suppression mode selection)	0: standard mode (default) 1: suppression mode 1 2: suppression mode 2

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3. Primary Charging Assembly Cleaning Mechanism

Volume 3>Chapter 6>VI.A.2. "Charging Wire Cleaning Mechanism"

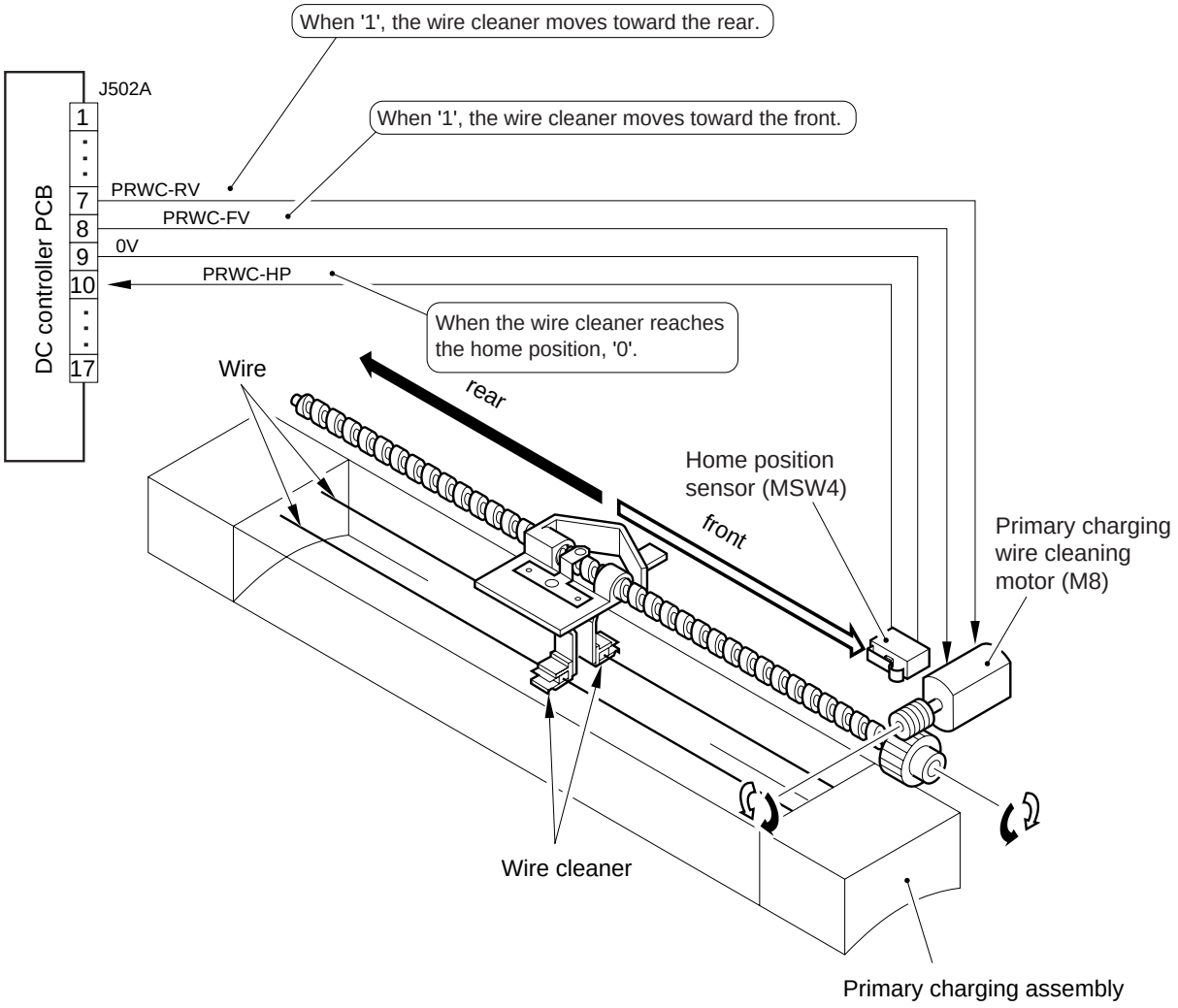


Figure 6-302 Construction of the Construction System

Timing of Cleaning

[1] The surface temperature of the fixing roller is 100˚C or lower when the control panel power switch is turned on.
[2] The wire cleaning mechanism is turned on in user mode.
[3] At the end of LSTR after making 2000 prints following wire cleaning.

Related Error Code

E060 (wire cleaner HP error)	The wire cleaner does not reach the home position within a specific period of time.

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4. Others

Related Service Mode

COPIER>ADJUST>HV-PRI>GDID (grid bias output adjustment value input)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the value recorded on the service label.

Related Error Code

E065 (primary charging output error)	An overcurrent is detected (PR-ERR=1) because of leakage.

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B. Dust-Collecting Roller Bias

1. Outline

The dust-collecting roller bias mechanism is controlled for the following:

[1] Turning on and off the dust-collecting roller bias.

Figure 6-303 shows the construction of the dust-collecting roller bias control system.

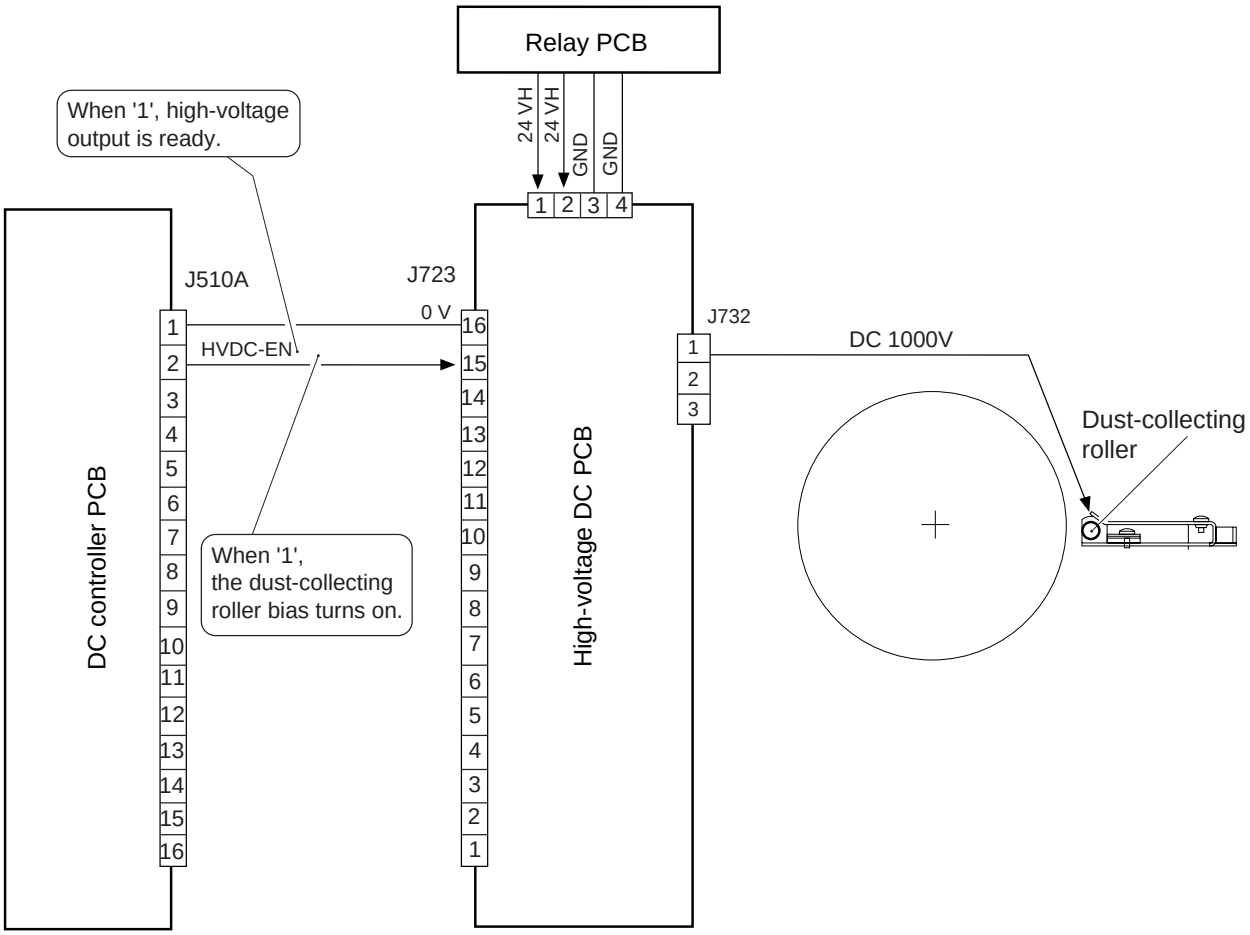


Figure 6-303 Construction of the Control System

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C. Controlling the Pre-Transfer Charging Mechanism

1. Outline

The pre-transfer charging mechanism is controlled for the following:

[1] DC bias constant current
[2] AC bias constant voltage
[3] Output to suit the environment (fuzzy control)

Figure 6-304 shows the construction of the pre-transfer charging control system.

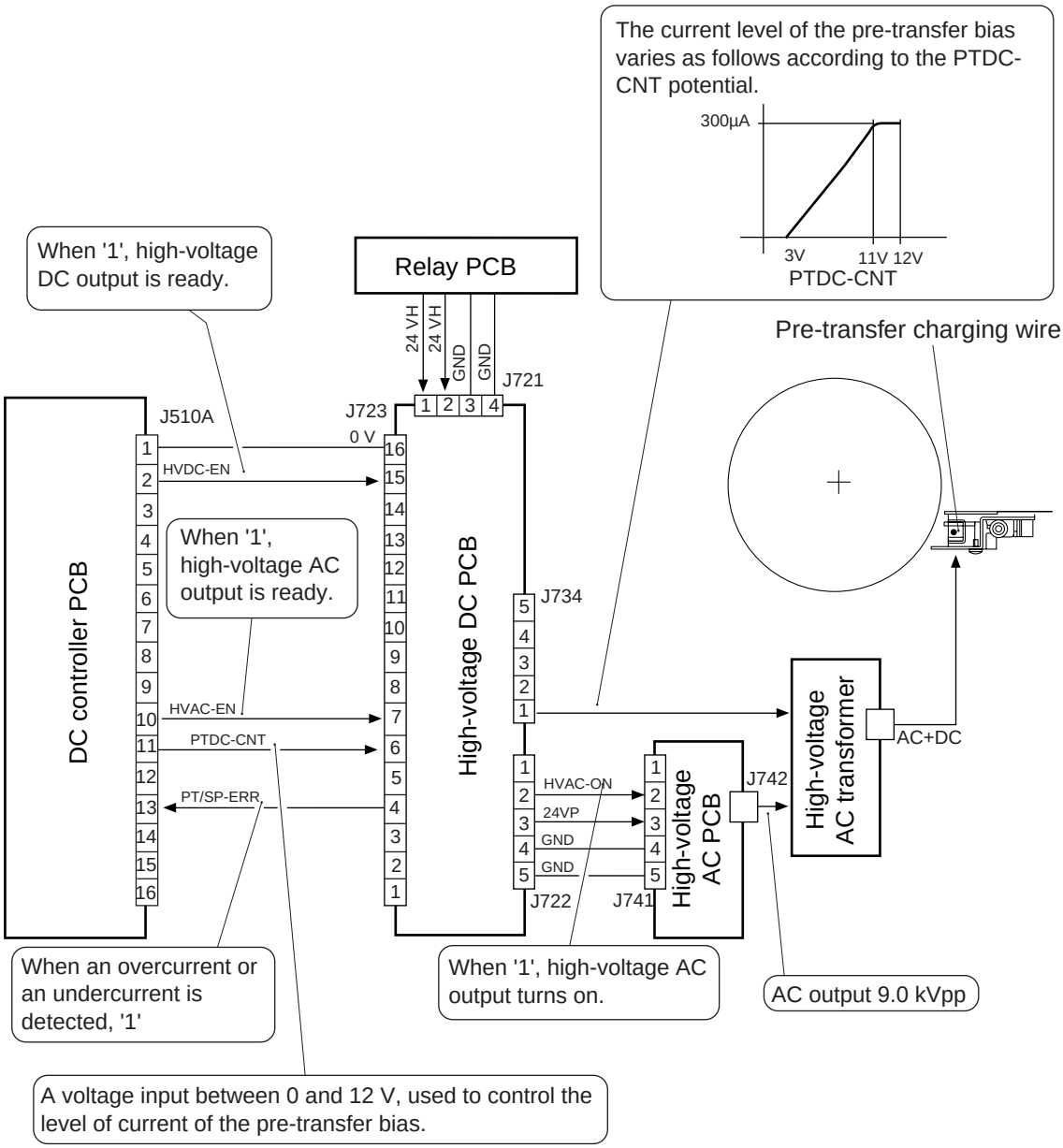


Figure 6-304 Construction of the Control System

2. Controlling the Output to Suit the Environment (fuzzy control)

The pre-transfer charging current is controlled to an optimum value to suit the environment (conditions identified based on data from the environment sensor).

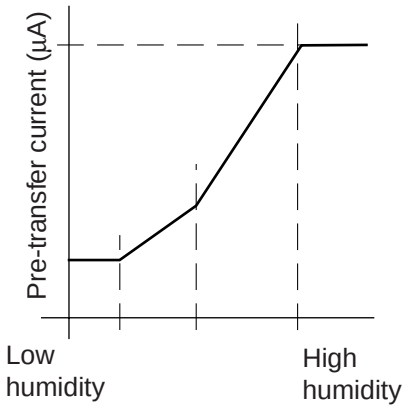


Figure 6-305 Pre-Transfer Current Output Table

Related Service Mode

COPIER>OPTION>BODY>FUZZY (fuzzy control ON/OFF)	0: enable fuzzy control. (default) 1: low humidity mode. (The pre-transfer charging current is lower than the standard level.) 2: normal humidity mode. 3: high humidity mode. (The pre-transfer charging current is higher than the standard level.) Selecting '1' through '3' makes the mechanism independent of the environment sensor.

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3. Pre-Transfer Charging Assembly Cleaning Mechanism

🕮 Volume 3>Chapter 6>V.A.2. "Charging Wire Cleaning Mechanism"

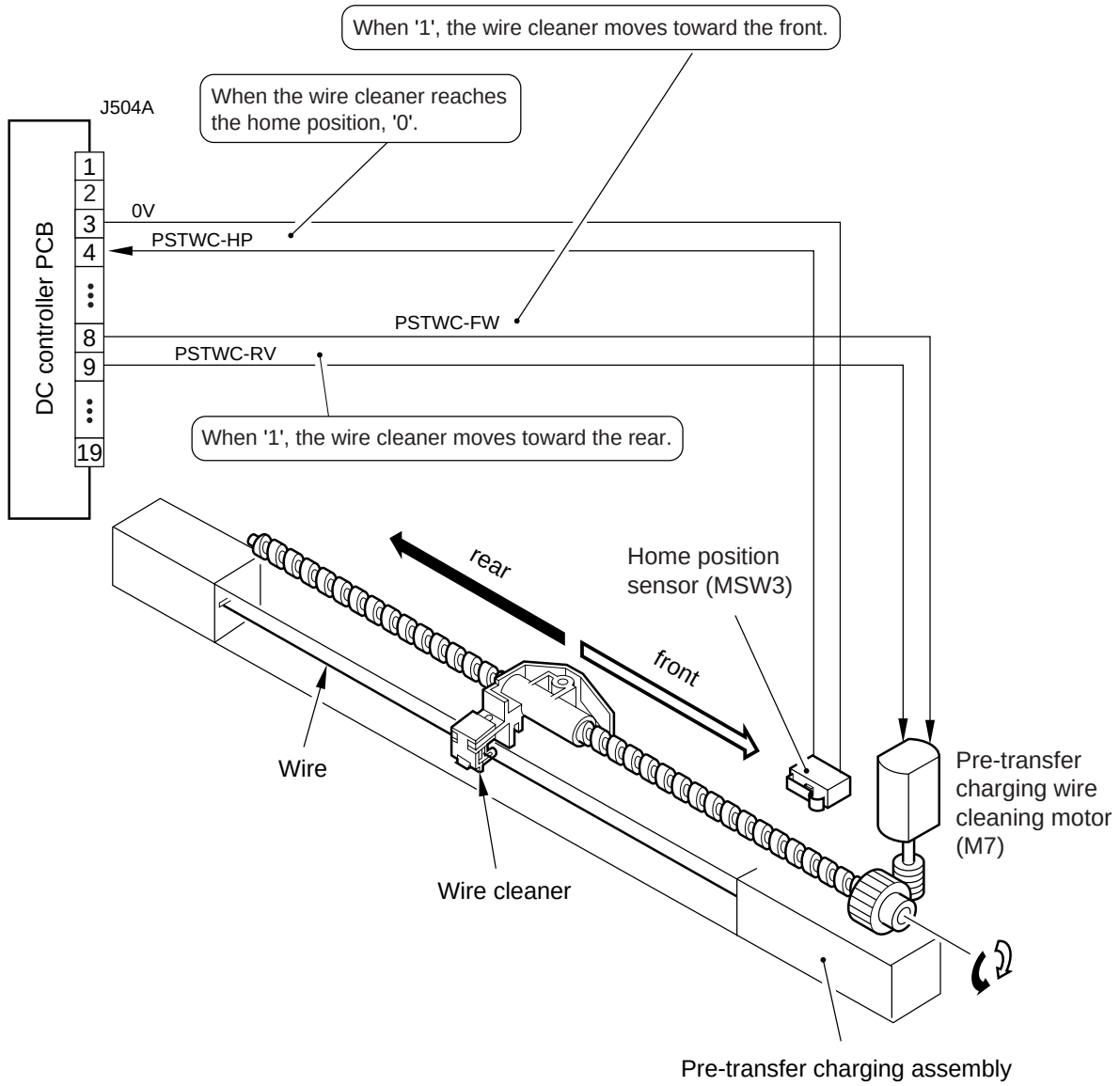


Figure 6-306 Construction of the Control System

Timing of Cleaning

[1] The surface temperature of the fixing roller is 100˚C or lower when the control panel power switch is turned on.
[2] The wire cleaning mechanism is turned on in user mode.
[3] At the end of LSTR after making 2000 prints following wire cleaning.

Related Error Code

E066 (wire cleaner home position error)	The wire cleaner does not reach the home position in a specific period of time.

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4. Others

Related Service Mode

COPIER>ADJUST>HV-TR>PRE-TR (pre-transfer charging current output adujstment input)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the value on the service label.

Related Error Code

E068 (pre-transfer charging output error)	An overcurrent is detected (PT/SP-ERR=1) because of leakage.

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D. Controlling the Transfer Guide Bias

1. Outline

To prevent soiling of the surface of the transfer guide with toner (leading to soiled backs), a bias of the same polarity as toner is applied to the transfer guide. The transfer guide charging mechanism is controlled for the following:

[1] Transfer guide bias constant voltage
[2] Output to suit the environment

Figure 6-307 shows the construction of the transfer guide bias

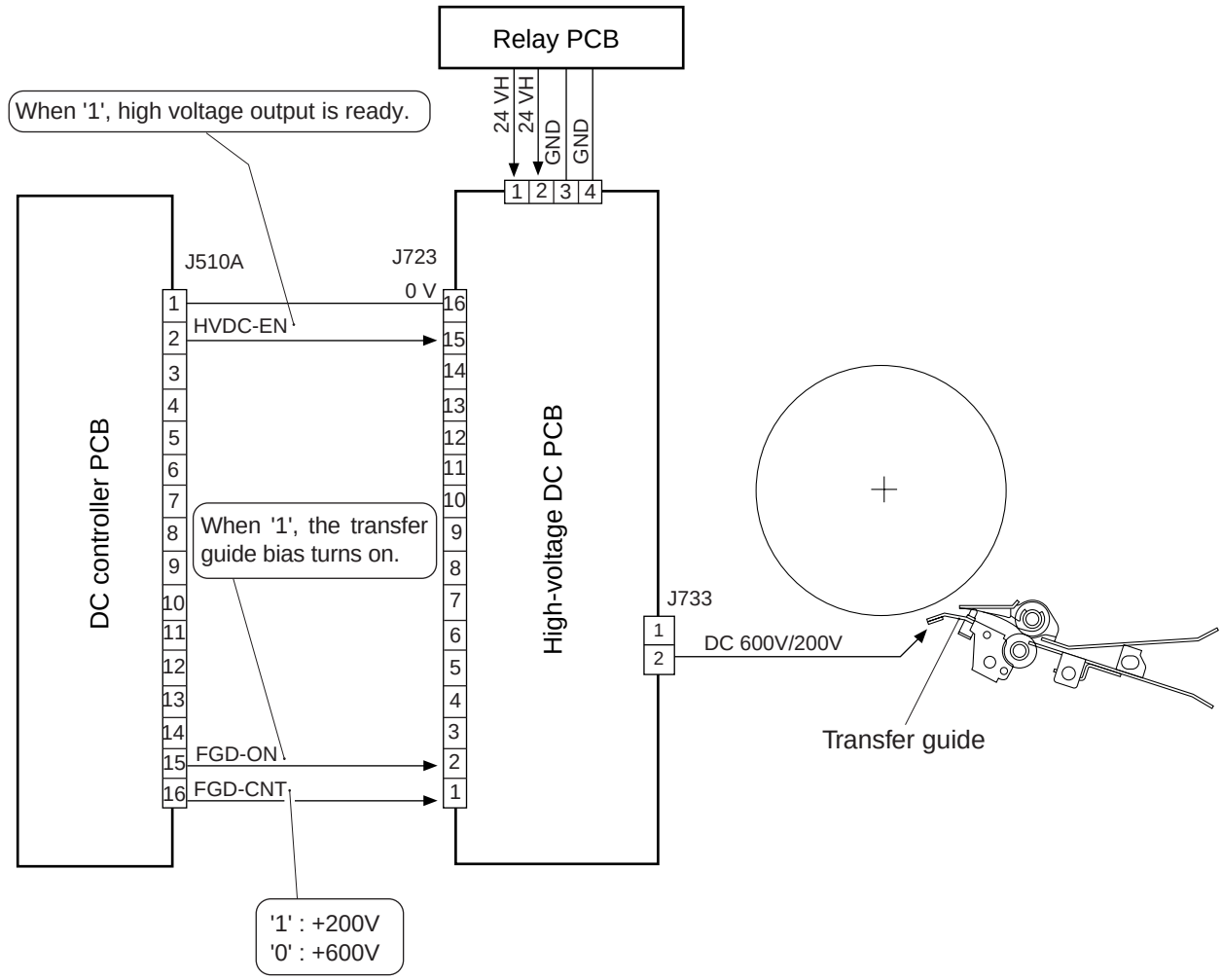


Figure 6-307 Construction of the Control System

2. Controlling the Output to Suit the Environment

The transfer guide bias is controlled to an optimum level to suit the environment (conditions identified based on data from the environment sensor).

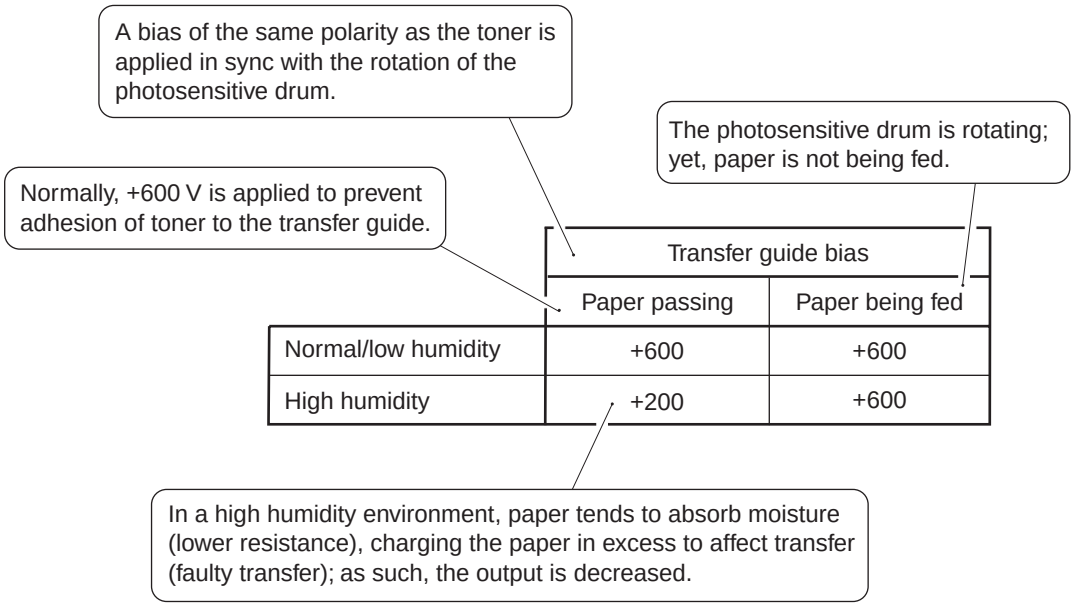

A bias of the same polarity as the toner is applied in sync with the rotation of the photosensitive drum.
The photosensitive drum is rotating; yet, paper is not being fed.
Normally, +600 V is applied to prevent adhesion of toner to the transfer guide.
Transfer guide bias
Paper passing
Paper being fed
Normal/low humidity
+600
+600
High humidity
+200
+600
In a high humidity environment, paper tends to absorb moisture (lower resistance), charging the paper in excess to affect transfer (faulty transfer); as such, the output is decreased.

Figure 6-308 Transfer Guide Bias Output Table

Related Service Mode

COPIER>OPTION>BODY>TRNSG-SW (transfer guide bias control mode switching)	0: switches to +200 V in high humidity. (default) 1: fixes the transfer guide bias to +600 V. 2: fixes the transfer guide bias to +200 V. 3: switches to +200 V in normal humidity. 4: switches to +200 V in low humidity. If transfer faults occur, select '2' through '4'.

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E. Controlling the Transfer Charging Mechanism

1. Outline

The transfer charging mechanism is controlled for the following:

[1] DC bias constant current
[2] Output to suit the environment (fuzzy control)
[3] Output correction at the trailing edge of paper

Figure 6-309 shows the construction of the transfer charging control system.

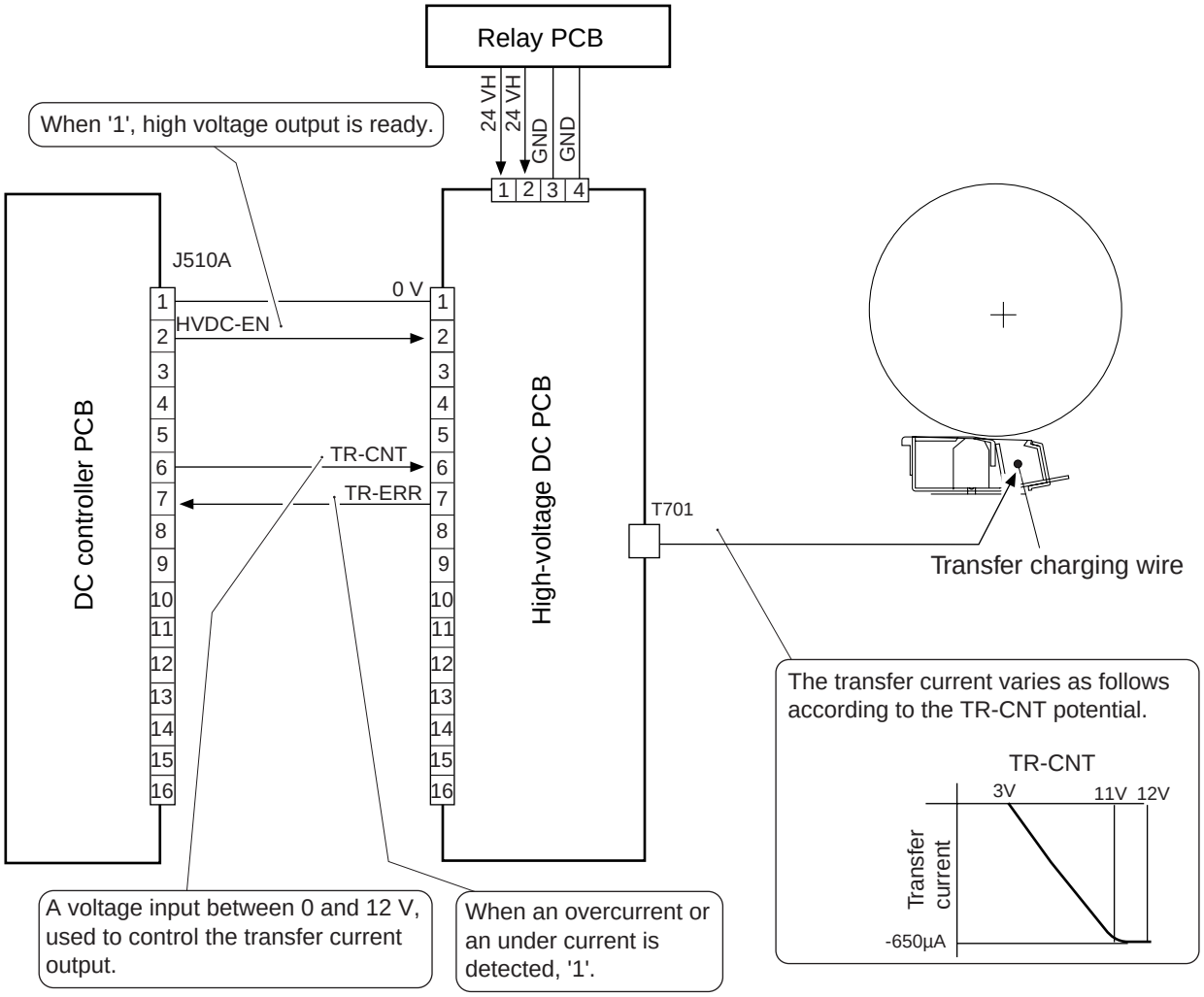


Figure 6-309 Construction of the Control System

2. Controlling the Output to Suit the Environment (fuzzy control)

The transfer current output is controlled to an optimum level to suit the environment (conditions identified based on the data from the environment sensor).

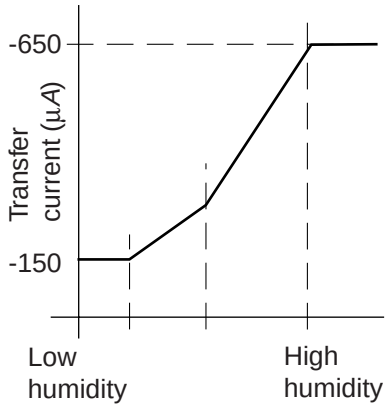


Figure 6-310 Transfer Current Output Table

Related Service Mode

COPIER>OPTION>BODY>FUZZY (fuzzy control ON/OFF)	0: enable fuzzy control. (default) 1: low humidity mode. (The transfer current is lower than the standard level.) 2: normal humidity mode. 3: high humidity mode. (The transfer current is higher than the standard level.) Selecting '1' through '3' makes the control mechanism independent of the environment sensor.

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3. Correcting the Output at the Trailing Edge of Paper

When paper moves through the transfer charging assembly, the resistance abruptly drops as soon as the paper leaves the assembly, possibly causing discharge current momentarily and, ultimately, leading to white spots or distorted images. To prevent such a problem, the transfer current level is corrected (reduced) when the trailing edge of paper passes.

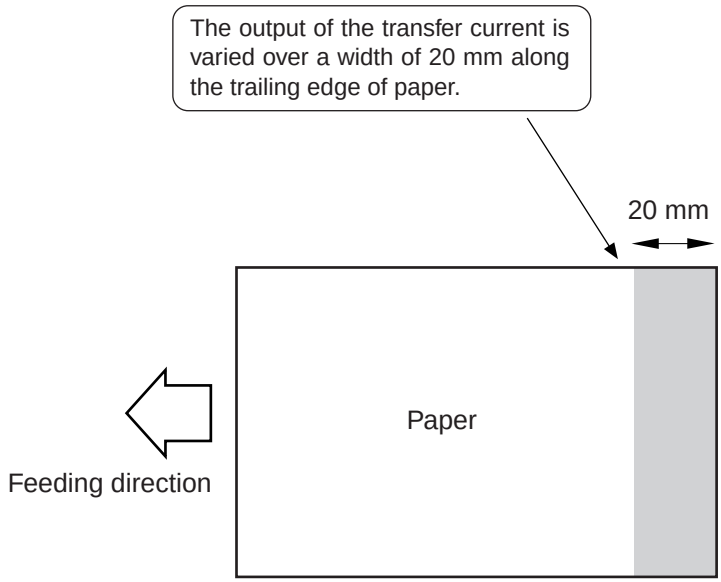

The output of the transfer current is varied over a width of 20 mm along the trailing edge of paper.
20 mm
Paper
Feeding direction

Figure 6-311 Trailing Edge of Paper

When making a double-sided print, paper will absorb fixing oil and tend to collect less charges (low resistance); since the discharge current along the trailing edge of paper will be low, the output is not varied.

In a low humidity environment, paper tends to dry up collecting excess charges (high resistance); to counter, the output is reduced.

	Transfer current correction (μA)	
	Single-sided copying	Double-sided copying
Low humidity	+220	———
Normal humidity	+150	———
High humidity	———	———

Table 6-302

Related Service Mode

COPIER>OPTION>BODY>TRSW-P-B (transfer current output correction control ON/OFF)	1: do not vary the transfer current level. (default; select if transfer faults occur along the trailing edge) 0: correct the transfer current level along the trailing edge of paper.

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4. Transfer Charging Assembly Cleaning Mechanism

📖 Volume 3>Chapter 6>VI.A.2. "Transfer Charging Wire Cleaning Mechanism"

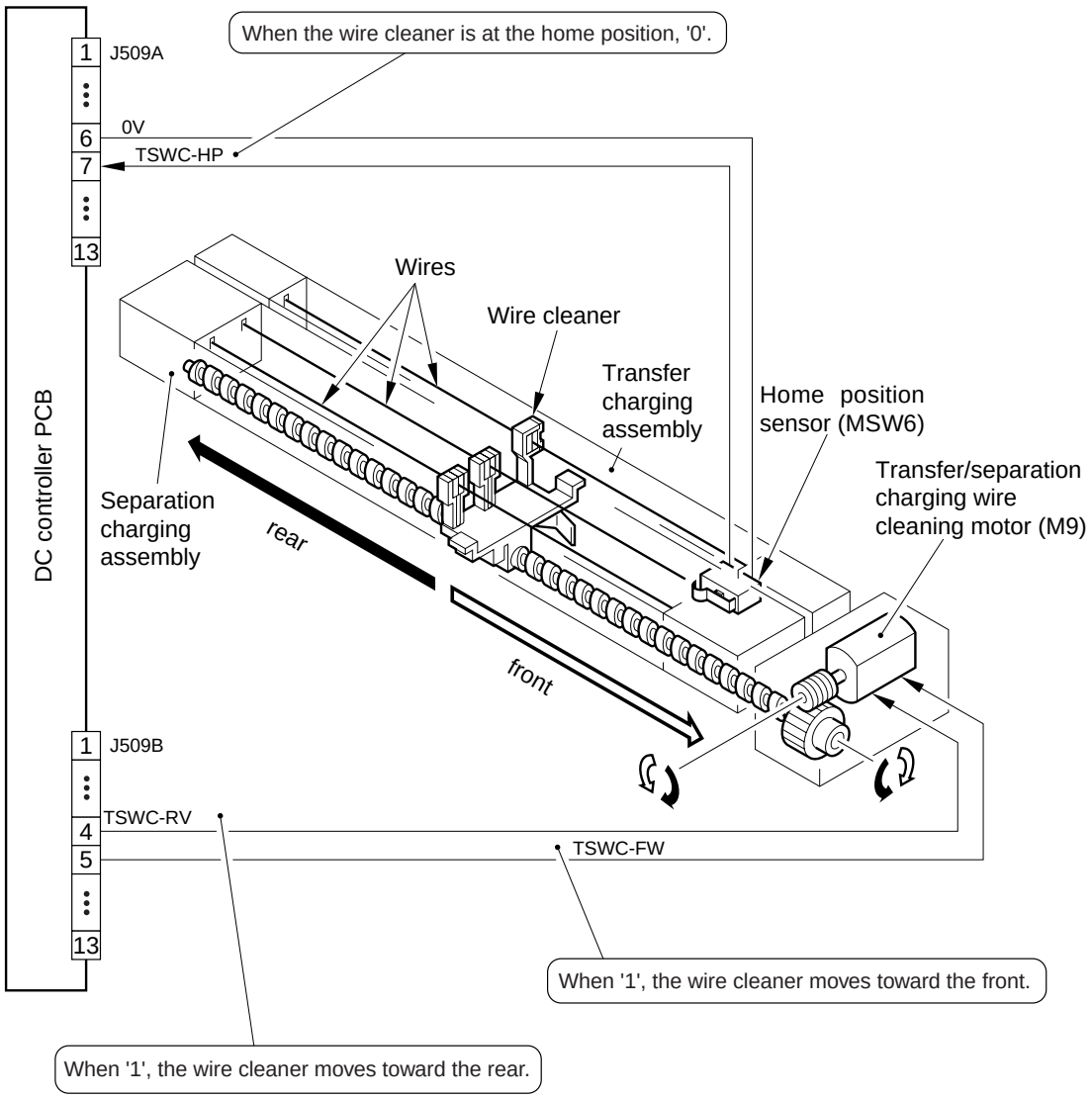


Figure 6-312 Construction of the Cleaning Mechanism

Timing of Cleaning

1. The surface temperature of the fixing roller is 100˚C or lower when the control panel power switch is turned on.
2. The wire cleaning mechanism is turned on in user mode.
3. At the end of LSTR after making 2000 prints following wire cleaning.

Related Error Code

E063 (wire cleaner home position error)	The cleaner does not reach the home position within a specific period of time.

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5. Others

Related Service Mode

COPIER>ADJUST>HV-TR>TR-N1 (output adjustment on single-sided print or 1st side of double-sided print; plain paper)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the value recorded on the service label.
COPIER>ADJUST>HV-TR>TR-N2 (output adjustment on 2nd side of double-sided print; plain paper)	

Related error Code

E069 (transfer charging output error)	An overcurrent is detected (TR-ERR=1) because of leakage.

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F. Controlling Separation Charging

1. Outline

The separation mechanism is controlled for the following:

[1] DC bias constant current
[2] AC bias constant current
[3] output correction to suit the environment and deposit of toner (fuzzy control)
[4] output correction upon detection of leakage

Figure 6-313 shows the construction of the control system for the separation charging mechanism.

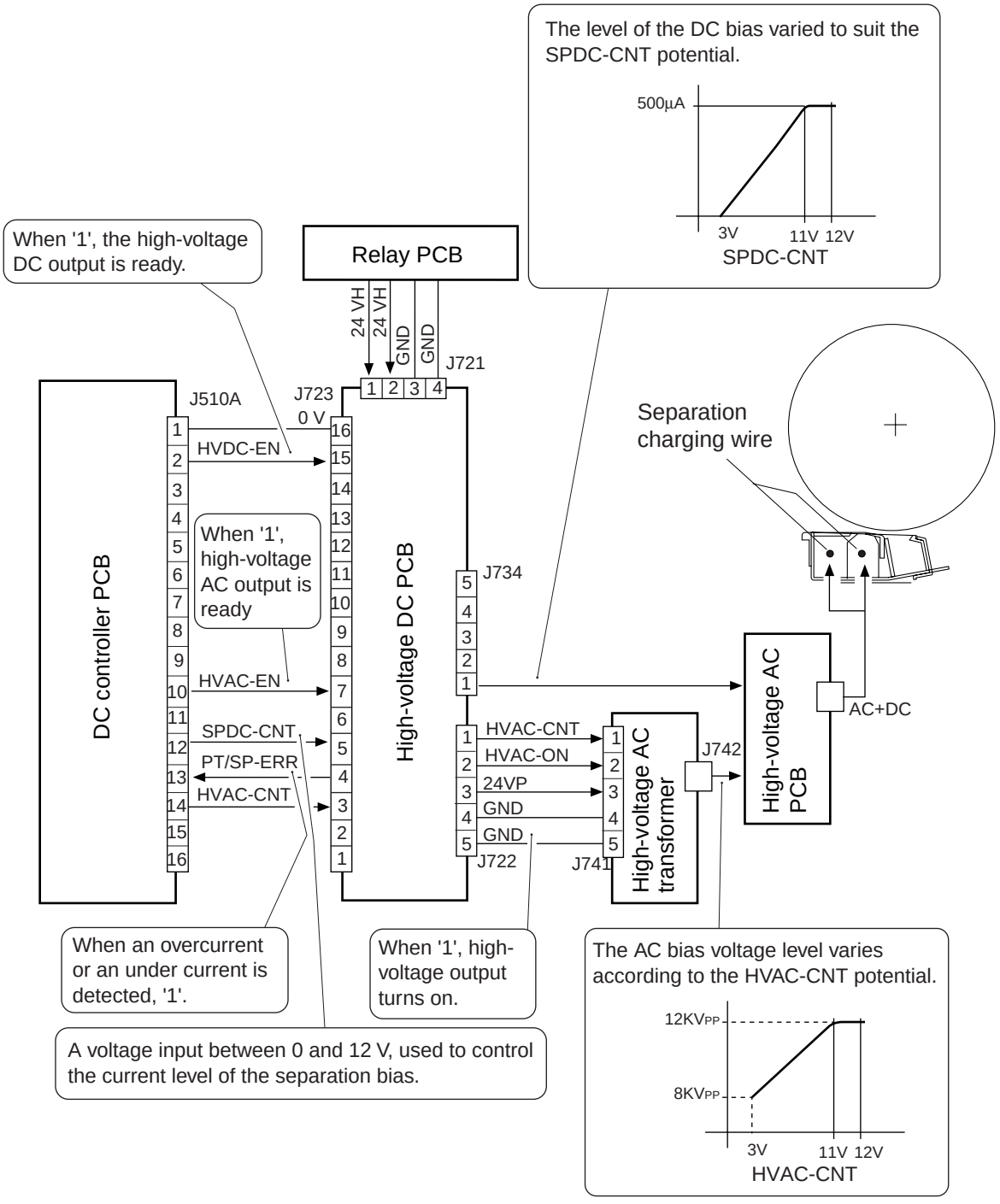


Figure 6-313 Construction of the Control System

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2. Correcting the Output to Suit the Environment and the Toner Deposit

The separation current output is controlled to an optimum level to suit the environment (conditions identified by the data from the environment sensor) and the toner deposit (low, average, or high based on the count of black pixels).

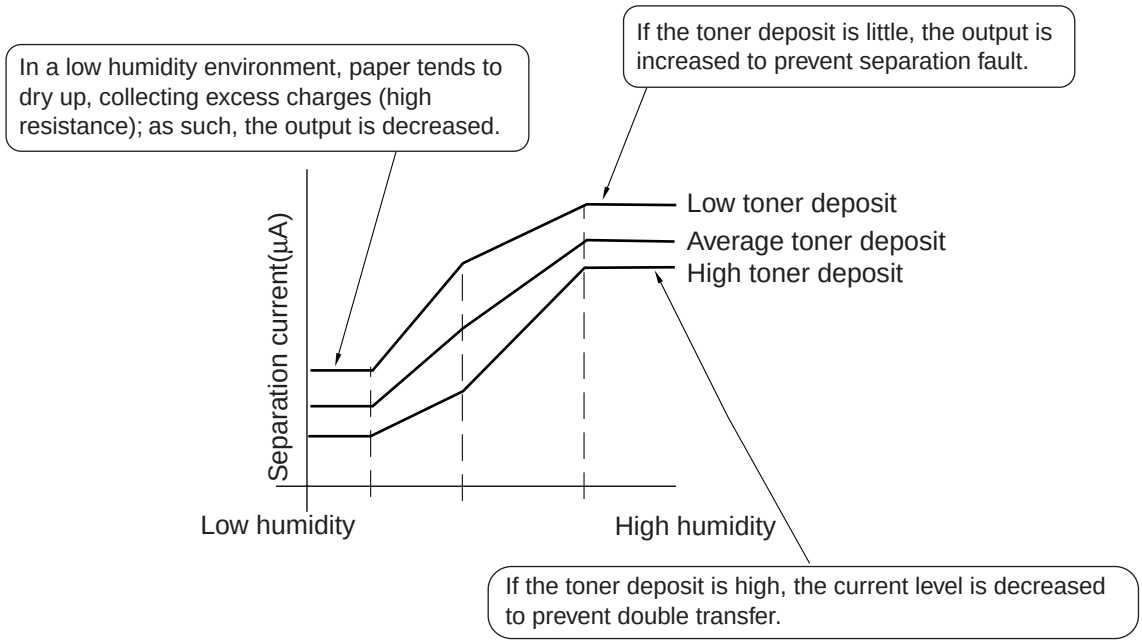

In a low humidity environment, paper tends to dry up, collecting excess charges (high resistance); as such, the output is decreased.
If the toner deposit is little, the output is increased to prevent separation fault.
Low toner deposit
Average toner deposit
High toner deposit
Separation current(µA)
Low humidity
High humidity
If the toner deposit is high, the current level is decreased to prevent double transfer.

Figure 6-314 Separation Current Output Table

Related Service Mode

COPIER>OPTION>BODY>FUZZY (fuzzy control ON/OFF)	0: enable fuzzy control. (default) 1: low humidity mode. (The separation current is lower than the standard level.) 2: normal humidity mode. 3: high humidity mode. (The separation current is higher than the standard level.) Selecting '1' through '3' makes the control mechanize independent of the environment sensor.

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3. Correcting the Output upon Detection of Leakage

The separation output is decreased upon detection of leakage.

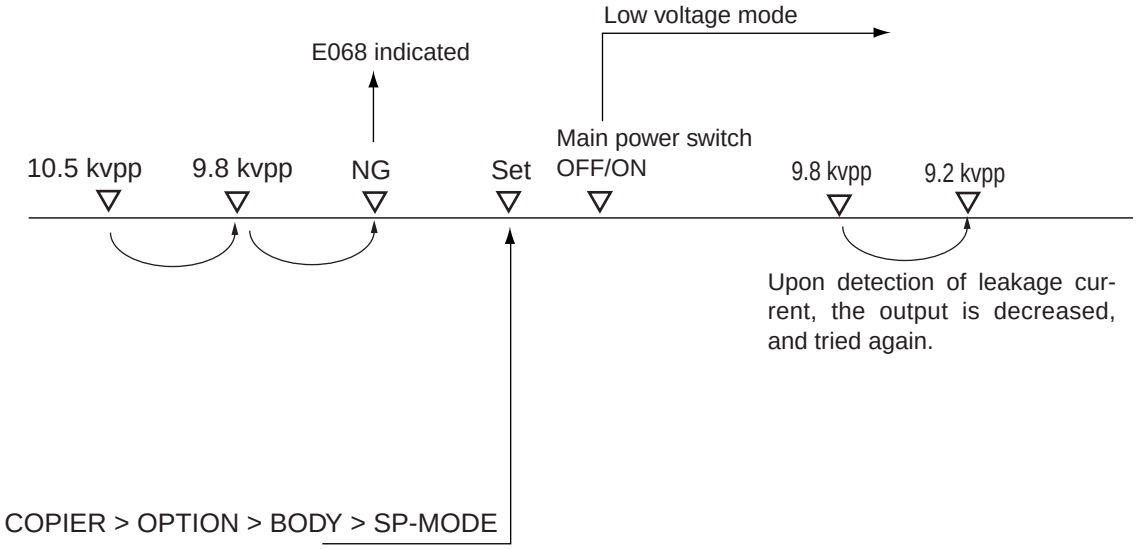


Figure 6-315 Sequence of Operations

Related Service Mode

COPIER>OPTION>BODY> SP-MODE	0: standard mode. (default; AC output is 10.5 kVpp) 1: low voltage mode (AC output is 9.8 kVpp; select if errors caused by leakage occur frequently)

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4. Others

Related Service Mode

COPIER>ADJUST>HV-SP>SP-N1 (output adjustment for single-sided print or 1st side of double-side print; plain paper)	If you have replaced the image processor PCB or initialized the RAM on the image processor PCB, enter the value recorded on the service label.
COPIER>ADJUST>HV-SP>SP-N2 (output adjustment on 2nd side of double-sided print; plain paper)	

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IV . DEVELOPING ASSEMBLY

A. Outline

📖 Volume 3>Chapter 6>II.B.D. "Developing Assembly"

Figure 6-401 shows the construction of the developing assembly.

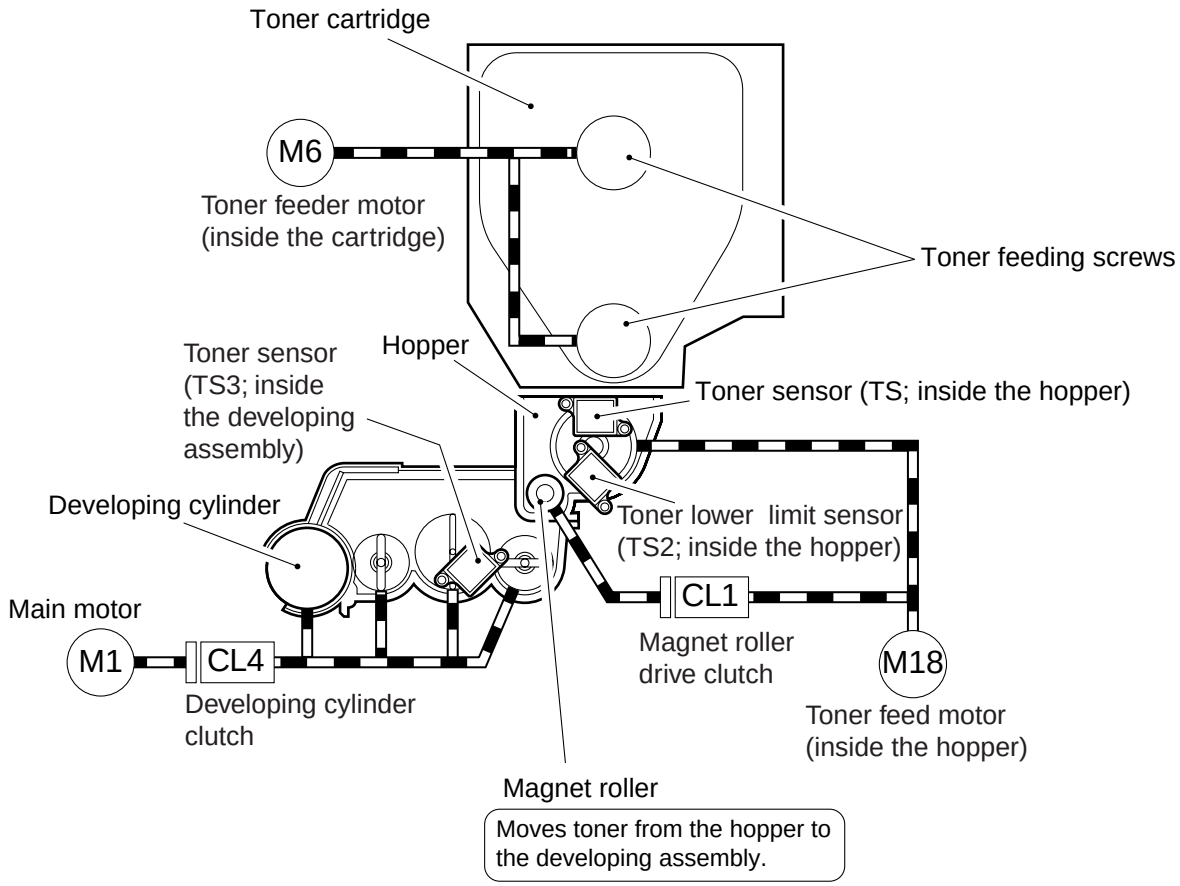


Figure 6-401 Construction of the Developing Assembly

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B. Controlling the Developing Assembly

Figure 6-402 shows the construction of the control system.

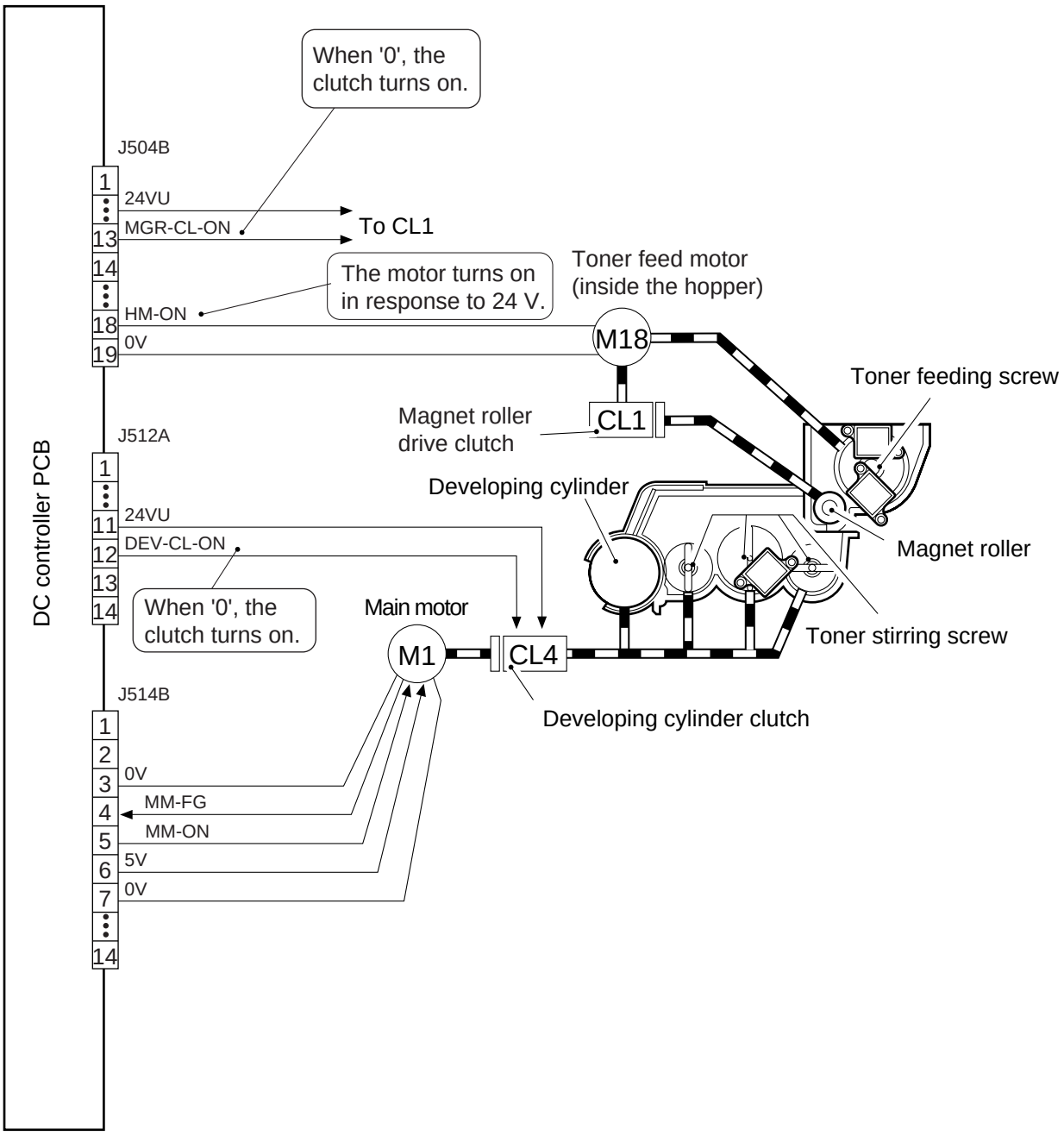


Figure 6-402 Construction of the Control System

C. Controlling the Toner Cartridge Drive Mechanism

Figure 6-403 shows the construction of the toner cartridge drive control system.

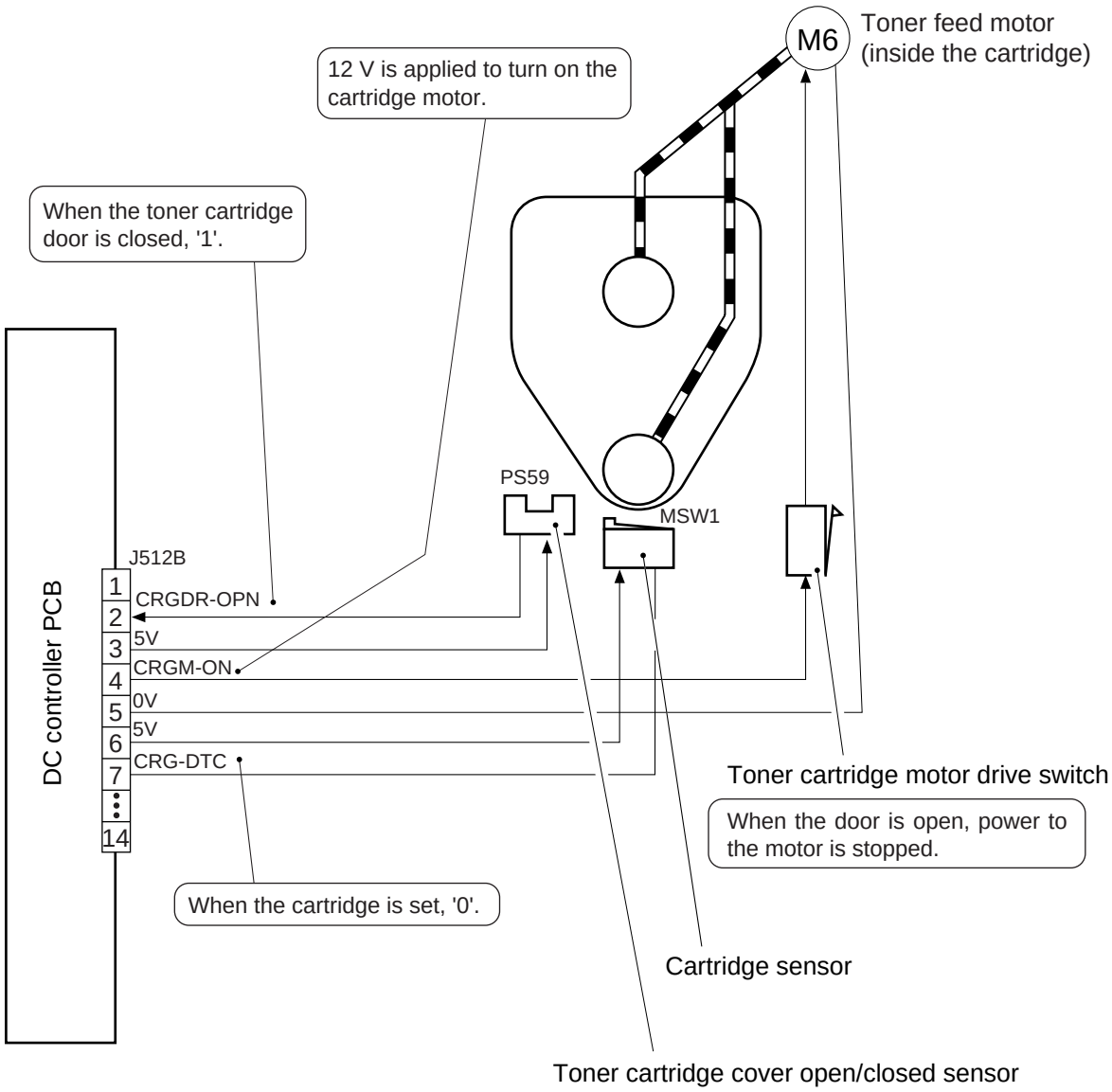


Figure 6-403

Related Error Code

E025 (cartridge toner feed motor fault)	An overcurrent caused by an overload on the motor has been detected twice.

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D. Controlling the Developing Bias

The developing bias is controlled for the following:

[1] DC bias constant voltage
[2] AC bias constant voltage

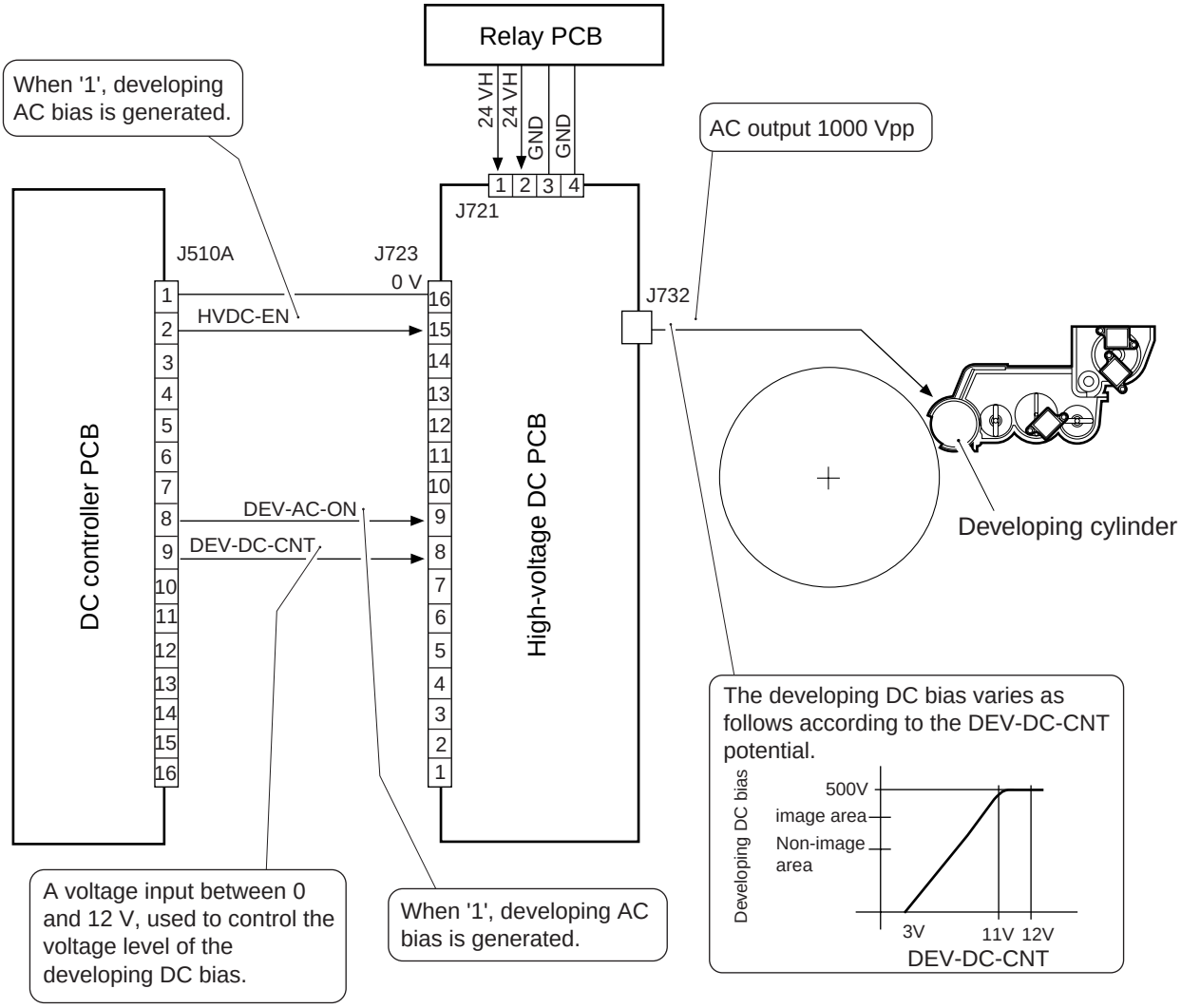
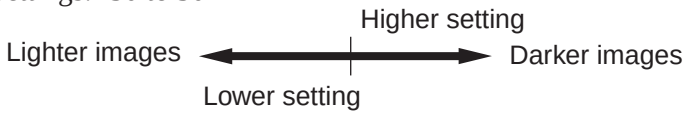


Figure 6-404 Construction of the Control System

Related Service Mode

COPIER>ADJUST>DEVELOP>DE-DC (image area developing DC bias output input)	If you have replaced the MFC PCB or initialized the RAM on the MFC PCB, enter the value recorded on the service label. Settings: 0 to 500
COPIER>ADJUST>DEVELOP>DE-NO-DC (sheet-to-sheet-distance developing DC bias output input)	
COPIER>ADJUST>DEVELOP>DE-OFST (developing DC bias offset level offset adjustment)	Settings: -50 to 50 

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E. Detecting the Toner Level and Controlling the Toner Supply Mechanism

Figure 6-406 shows the construction of the toner supply control system.

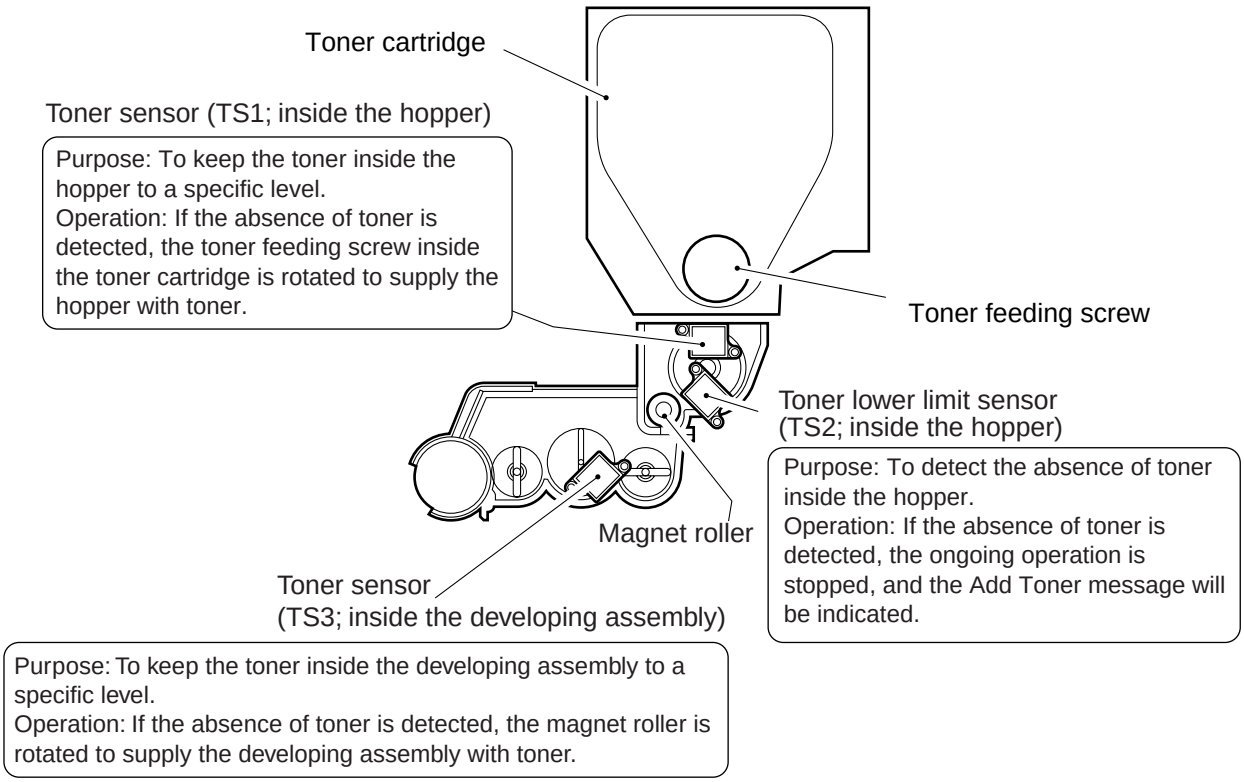

Toner cartridge
Toner sensor (TS1; inside the hopper)
Purpose: To keep the toner inside the hopper to a specific level.
Operation: If the absence of toner is detected, the toner feeding screw inside the toner cartridge is rotated to supply the hopper with toner.
Toner feeding screw
Toner lower limit sensor (TS2; inside the hopper)
Purpose: To detect the absence of toner inside the hopper.
Operation: If the absence of toner is detected, the ongoing operation is stopped, and the Add Toner message will be indicated.
Magnet roller
Toner sensor (TS3; inside the developing assembly)
Purpose: To keep the toner inside the developing assembly to a specific level.
Operation: If the absence of toner is detected, the magnet roller is rotated to supply the developing assembly with toner.

Figure 6-405

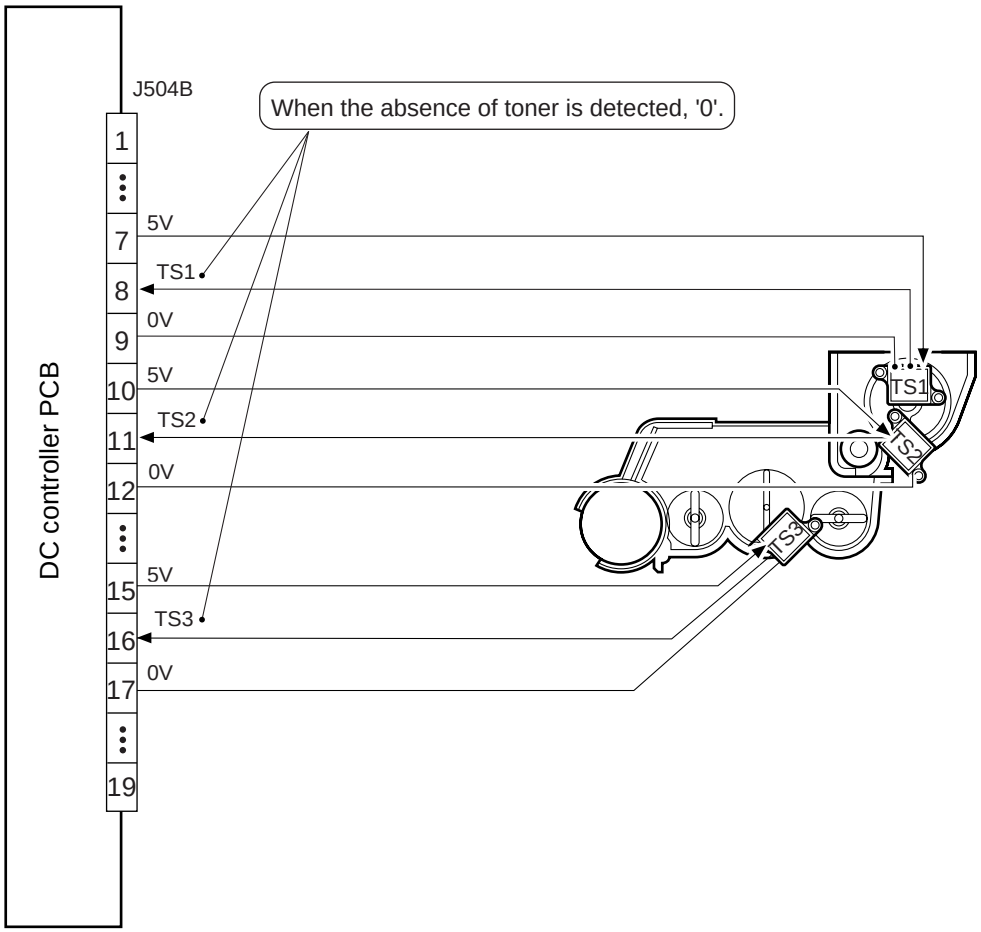


Figure 6-406 Construction of the Control System

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The hopper supplies the developing assembly with toner as follows:

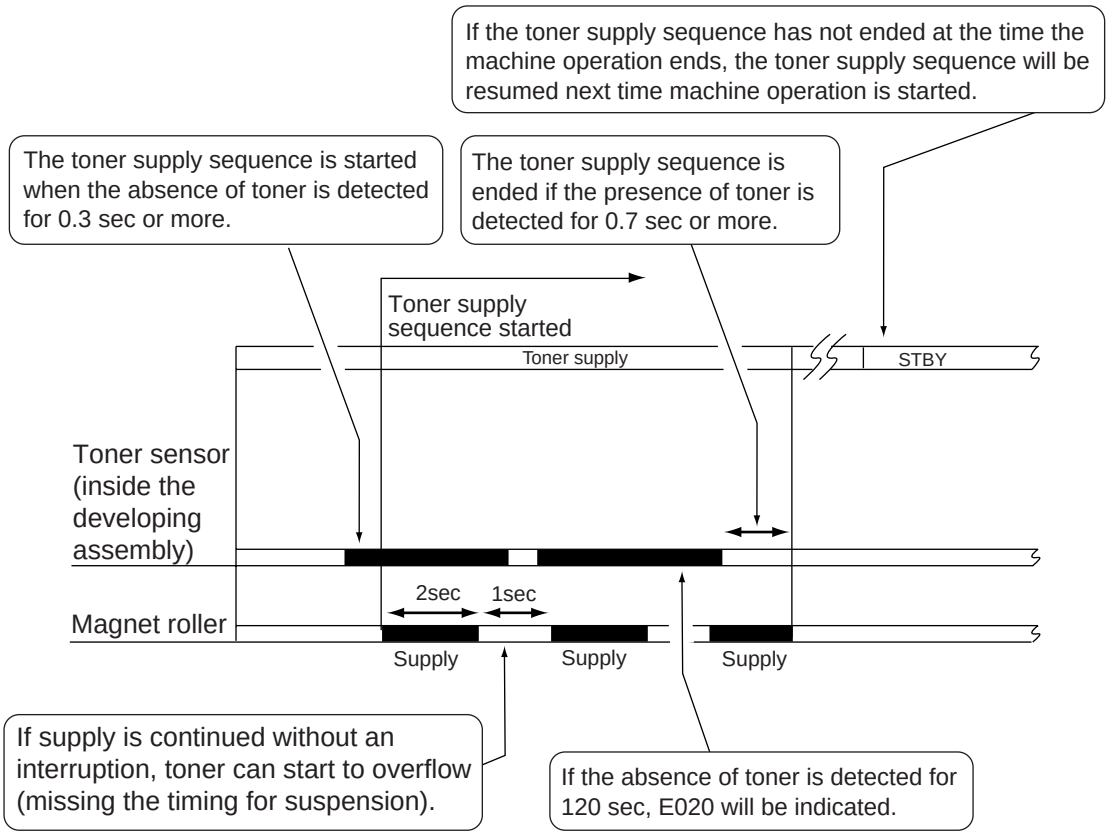

If the toner supply sequence has not ended at the time the machine operation ends, the toner supply sequence will be resumed next time machine operation is started.
The toner supply sequence is started when the absence of toner is detected for 0.3 sec or more.
The toner supply sequence is ended if the presence of toner is detected for 0.7 sec or more.
Toner supply sequence started
Toner supply
STBY
Toner sensor (inside the developing assembly)
2sec
1sec
Magnet roller
Supply
Supply
Supply
If supply is continued without an interruption, toner can start to overflow (missing the timing for suspension).
If the absence of toner is detected for 120 sec, E020 will be indicated.

Figure 6-407 Sequence of Operations

Figure 6-408 shows the sequence of operations by which the toner cartridge supplies the hopper with toner.

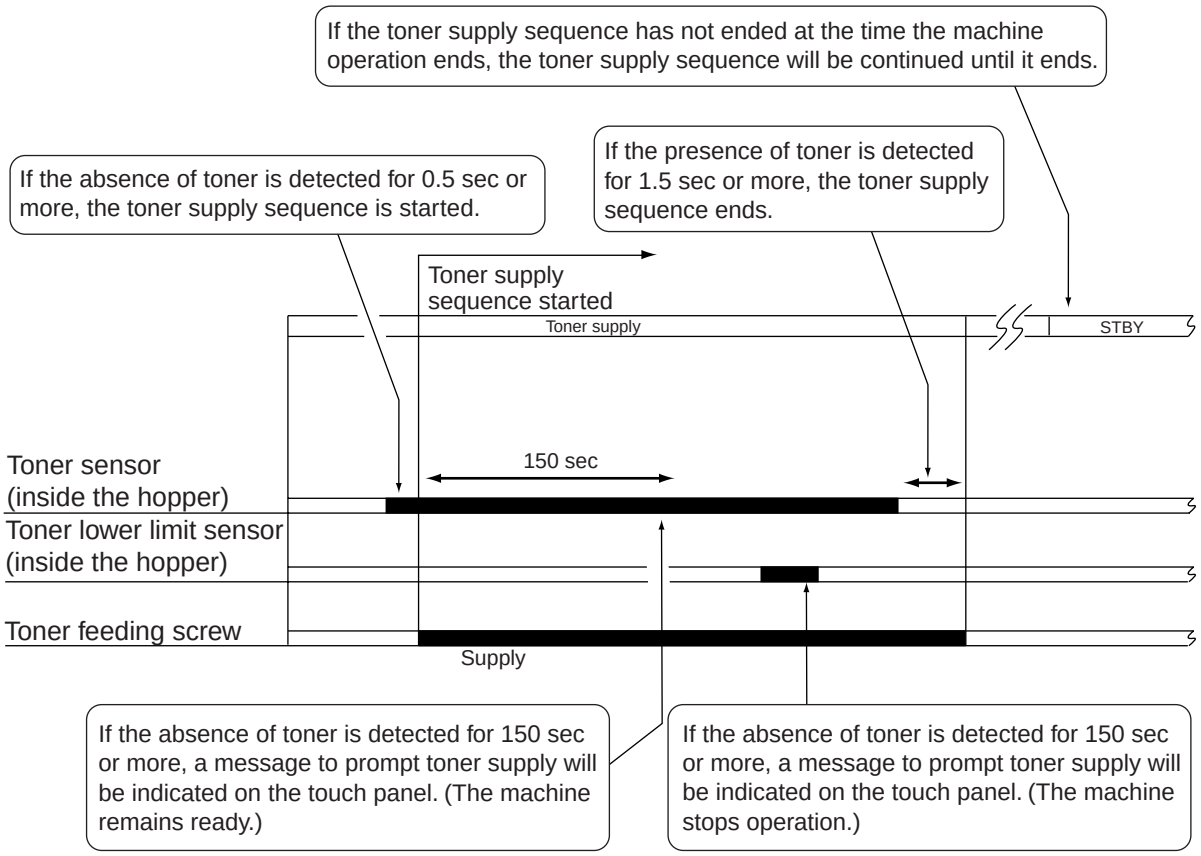

If the toner supply sequence has not ended at the time the machine operation ends, the toner supply sequence will be continued until it ends.
If the absence of toner is detected for 0.5 sec or more, the toner supply sequence is started.
If the presence of toner is detected for 1.5 sec or more, the toner supply sequence ends.
Toner supply sequence started
Toner supply
STBY
150 sec
Toner sensor (inside the hopper)
Toner lower limit sensor (inside the hopper)
Toner feeding screw
Supply
If the absence of toner is detected for 150 sec or more, a message to prompt toner supply will be indicated on the touch panel. (The machine remains ready.)
If the absence of toner is detected for 150 sec or more, a message to prompt toner supply will be indicated on the touch panel. (The machine stops operation.)

Figure 6-408 Sequence of Operations

Related Error Code

E020 (toner supply error)	The toner sensor (TS3; inside the developing assembly) has detected the absence of toner for 3 sec or more.

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V . DRUM CLEANER UNIT

A. Outline

🕮 Volume 3>Chapter 6>V. "Drum Cleaning"

Figure 6-501 shows the construction of the drum cleaner unit.

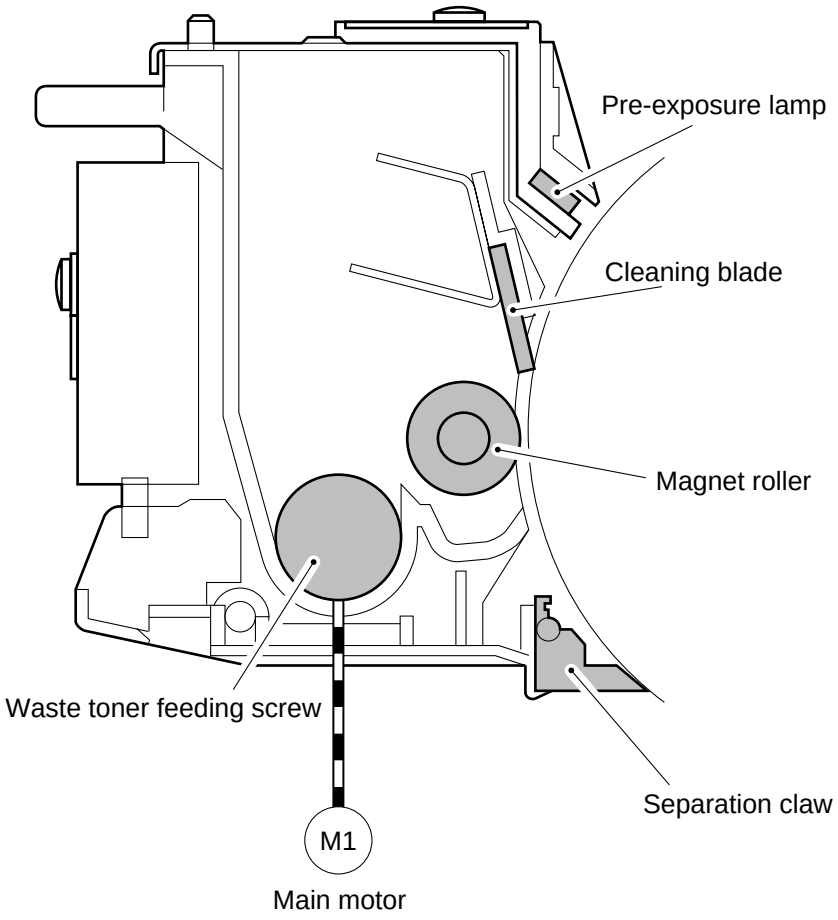


Figure 6-501 Construction of the Drum Cleaner Unit

B. Detecting the Waste Toner (case full condition)

Volume 3>Chapter 6>V.B. "Detecting the Waste Toner"

Figure 6-502 shows the construction of the control system used to monitor the waste toner case.

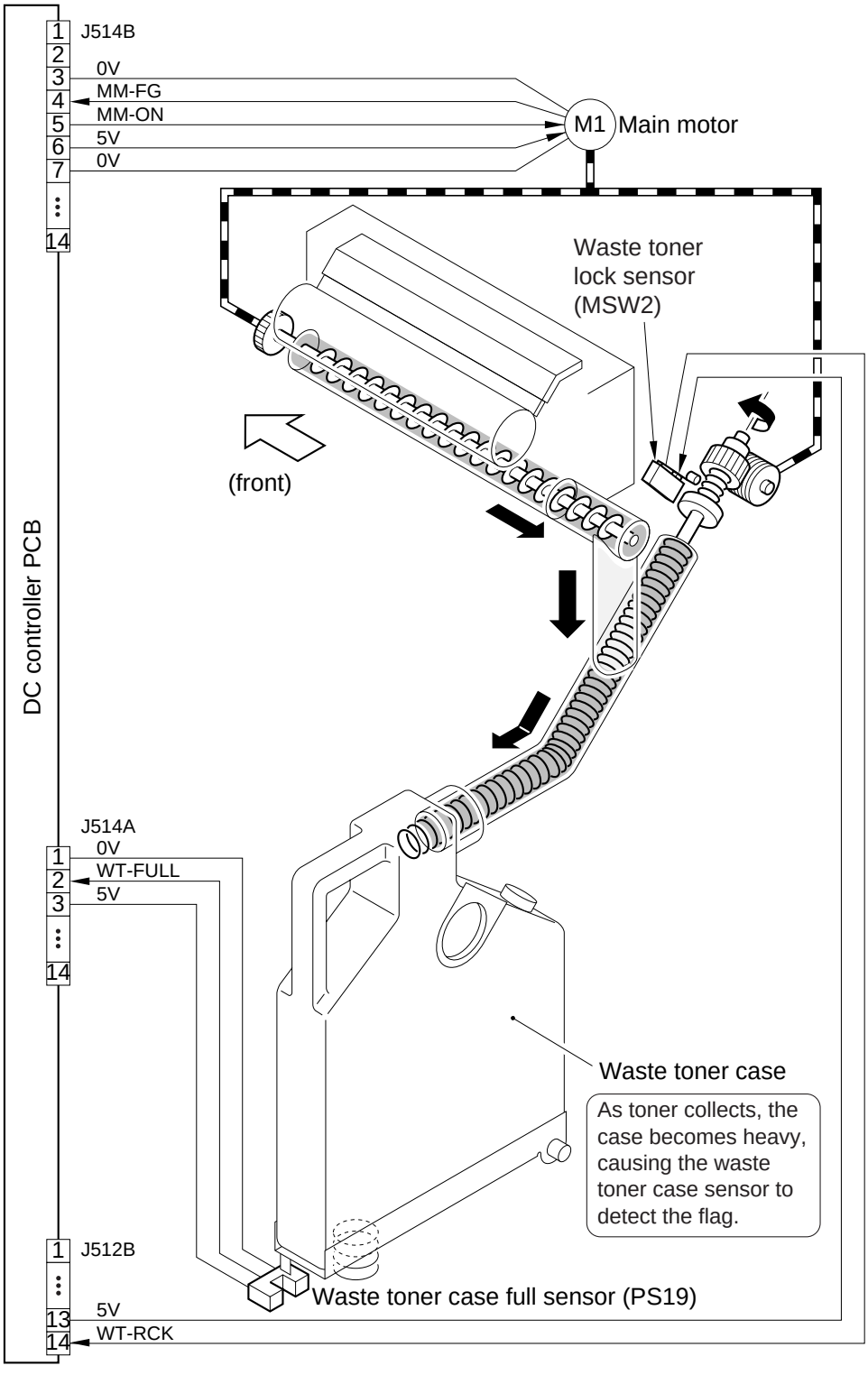


Figure 6-502 Construction of the Control System

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Related Error Code

E013 (waste toner lock)	The waste toner lock sensor (MSW2) has remained on for 4 sec or more.
E019 (waste toner case full)	After the waste toner case full sensor (PS19) has turned, on, 50,000 prints or more have been made without any action.

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VI . CONTROLLING THE DRUM HEATER

A. Outline

📖 Volume 2>Chapter 4>VI.B. "Drum Heater"

Figure 6-601 shows the construction of the control system for the drum heater.

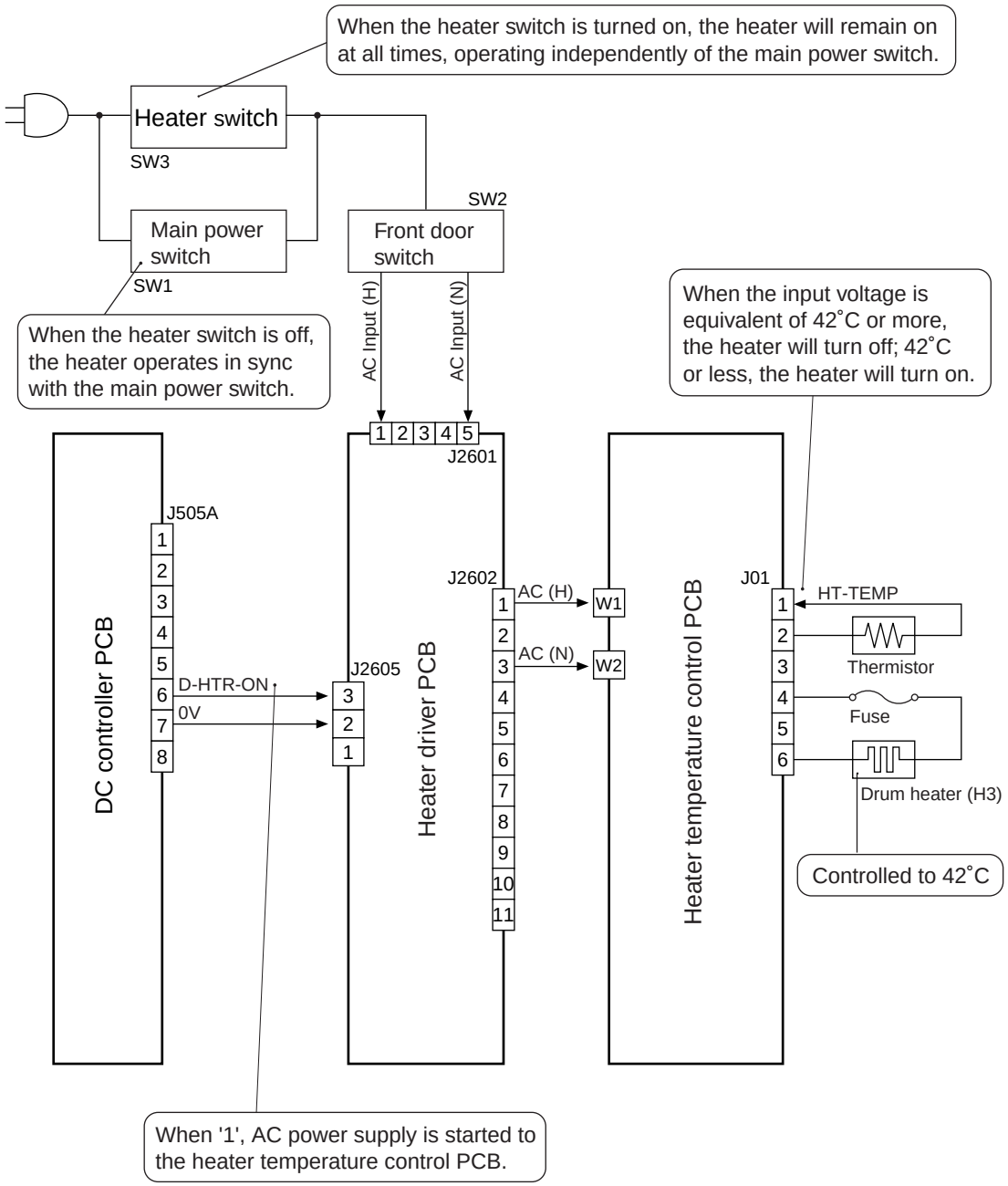

When the heater switch is turned on, the heater will remain on at all times, operating independently of the main power switch.
Heater switch
SW3
SW2
Main power switch
SW1
Front door switch
When the heater switch is off, the heater operates in sync with the main power switch.
AC Input (H)
AC Input (N)
When the input voltage is equivalent of 42˚C or more, the heater will turn off; 42˚C or less, the heater will turn on.
1 2 3 4 5
J2601
J505A
1 2 3 4 5 6 7 8
DC controller PCB
D-HTR-ON
0V
J2605
3 2 1
Heater driver PCB
J2602
1 2 3 4 5 6 7 8 9 10 11
AC (H)
AC (N)
W1
W2
Heater temperature control PCB
J01
1 2 3 4 5 6
HT-TEMP
Thermistor
Fuse
Drum heater (H3)
Controlled to 42˚C
When '1', AC power supply is started to the heater temperature control PCB.

Figure 6-601 Construction of the Control System

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VII . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. Photosensitive Drum Unit

1. Points to Note When Handling the Photosensitive Drum

The copier's photosensitive drum is a high-sensitivity amorphous silicon drum, and its sensitivity can deteriorate if it or the process unit is not placed or stored properly. Be sure to keep the following in mind when handling the photosensitive drum or the process unit:

1. If you have removed the process unit from the copier, keep the photosensitive drum away from light. To do so, use the photosensitive drum protective sheet or wrap it in six or more sheets of A3 copy paper.
2. Do not place the process unit or the photosensitive drum near a window, i.e., do not subject it to direct sunshine.
3. Do not place the process unit or the photosensitive drum in places subjected to high temperature, high humidity, low temperature, or low humidity or areas subject to rapid changes in temperature or humidity.
4. Do not place the process unit or the photosensitive drum in places subject to dust, ammonium gas, or organic solvent gas.

   The foregoing points apply to the photosensitive drum of all models.

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2. Removing the Photosensitive Drum

1) Open the front cover.
2) Slide out the process unit. (See Figures 6-D701 through -D703.)
3) Remove the three screws [1], and disconnect the three connectors [2]; then, detach the auxiliary plate [3].

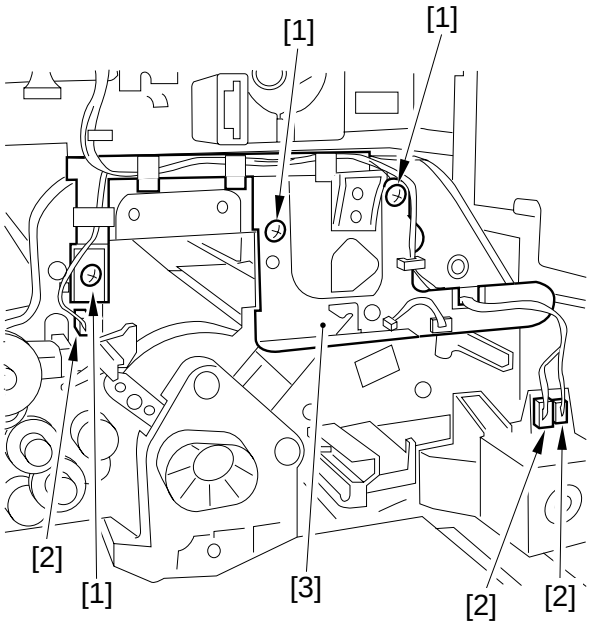


Figure 6-A701

4) Remove the two screws [4], and detach the positioning holder [5].

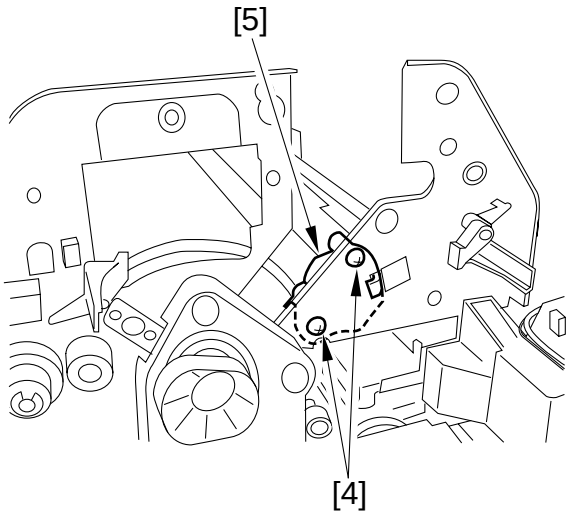


Figure 6-A702

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5) Remove the three screws [6], and remove the drum fixing plate [7].

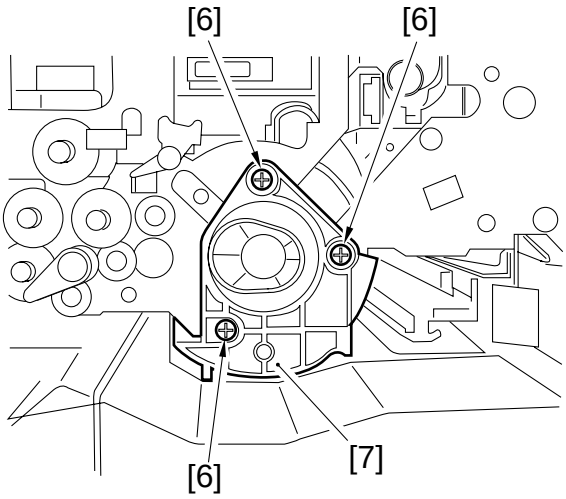


Figure 6-A703

6) Remove the screw [8], and detach the bearing stopper [9]; then, lift off the photosensitive drum [10] while sliding it to the front (in the direction of the arrow).

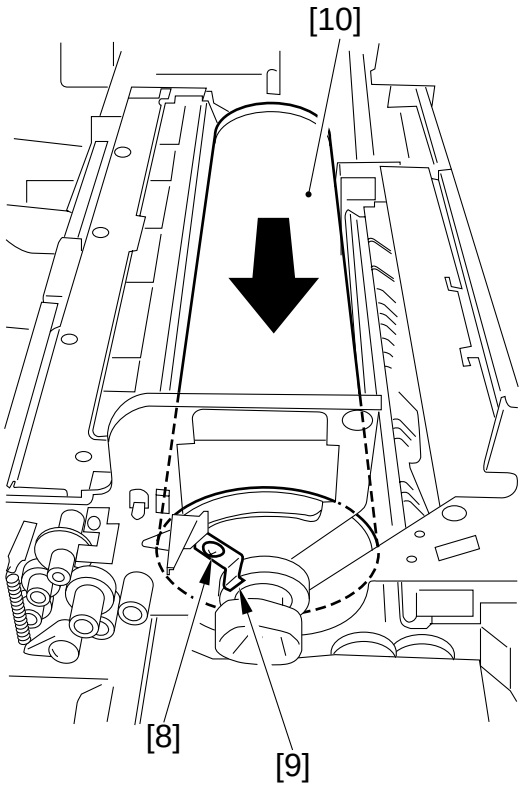


Figure 6-A704

Points to Note When Removing the Process Unit

[1] When you have removed the process unit, do not rotate the photosensitive drum in the opposite direction. Doing so could bend the blade.

[2] Do not rotate the magnet roller of the cleaner unit. Doing so will cause leakage of toner.

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3. Replacing the Photosensitive Drum Heater

1) Remove the photosensitive drum from the copier.
2) Remove the two mounting screws [1], and detach the flange [2] at the front; then, disconnect the connector [3].

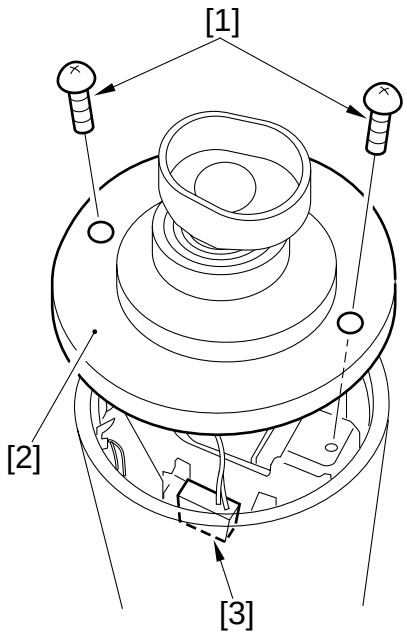


Figure 6-A705

3) Pull out the flange at the rear [4], and detach the power supply unit [5] from the photosensitive drum.

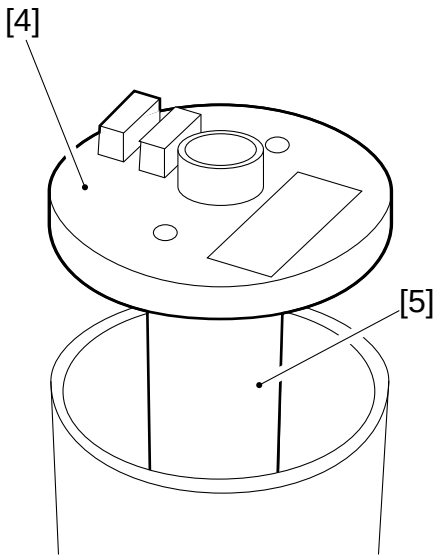


Figure 6-A706

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4) Pull out the flat heater (drum heater) [6] from inside the drum cylinder.

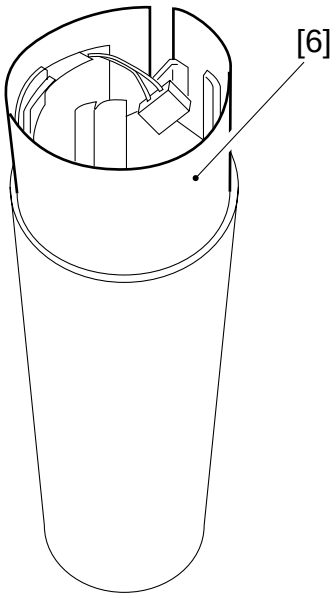


Figure 6-A707

Points to Note When Mounting the Flange

There is hardly a gap between the flange and the inner side of the drum, causing the flange to get stuck if pushed at an angle.
When mounting the flange, push it in a parallel direction to the drum without applying excessive force.

4. Mounting the Photosensitive Drum Unit

Mount the photosensitive drum by reversing the steps used to remove it with the following in mind.

Caution:

Be sure to attach the bearing stopper as soon as you have placed the photosensitive drum on the process unit. (Otherwise, the photosensitive drum may fall, damaging its surface.)

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B. Parts Associated with the Process Unit

1. Removing the Pre-Exposure Lamp Unit

1) Open the front cover.
2) Slide out the process unit.

Caution:
Cover the drum with A3 paper or the like when you have slid out the process unit.

3) Disconnect the connector [1], and remove the two screws [2]; then, detach the pre-exposure unit [3].

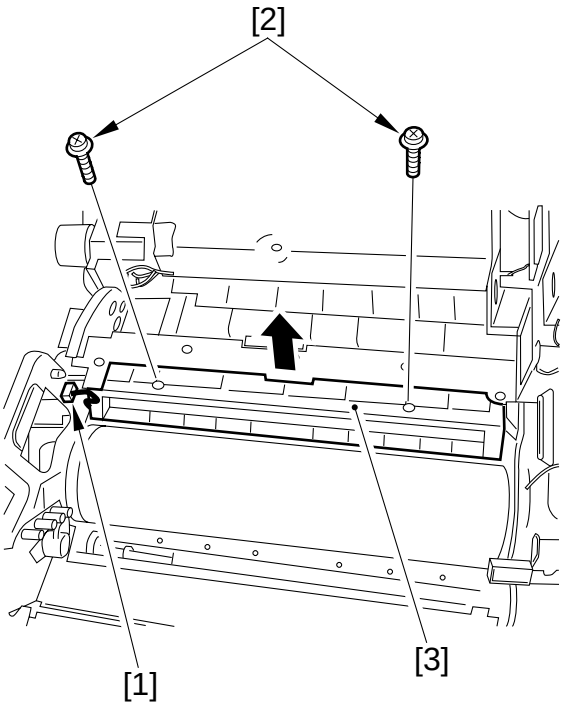


Figure 6-B701

4) Remove the three screws [4], and detach the pre-exposure holder [5]; then, detach the pre-exposure lamp [6].

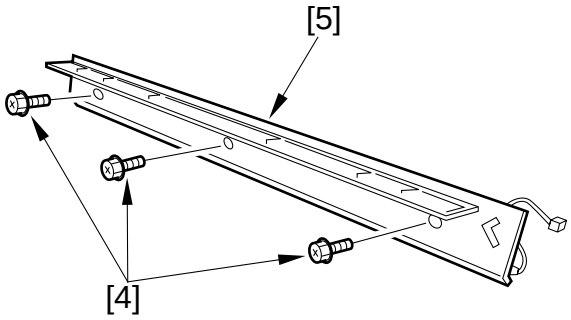


Figure 6-B702

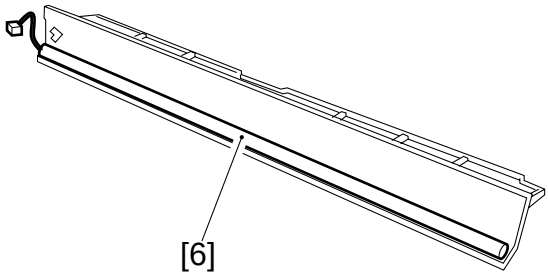


Figure 6-B703

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2. Removing the Potential Sensor Unit

1) Open the front cover.
2) Remove the process unit.
3) Push in the fixing/feeding assembly.
4) Disconnect the two connectors [1], and pull out the dust-proofing glass [2]; then, remove the screw [3], and detach the potential sensor unit [4].

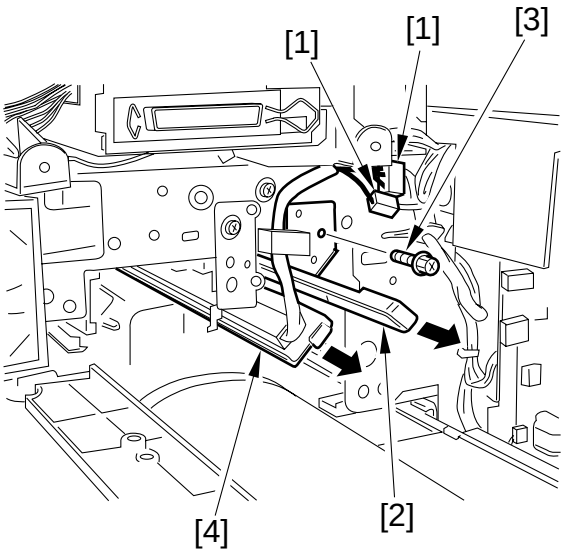


Figure 6-B704

Caution:
It is difficult to pull out the potential sensor in a horizontal direction. As shown, shift it down once, and then slide it out to facilitate the work.

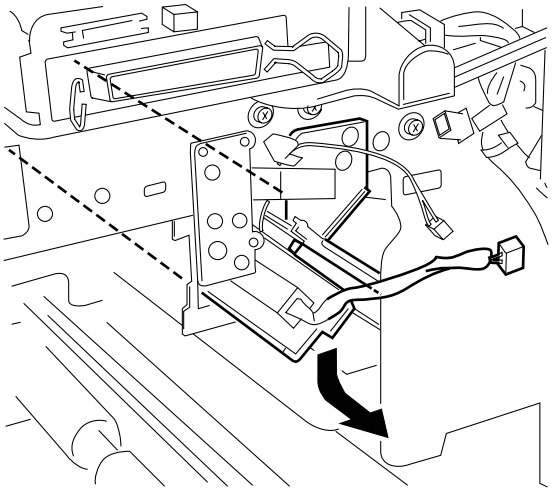


Figure 6-B705

5) Remove the two screws [5], and detach the potential sensor cover [6]; then, detach the potential sensor [7].

Caution:
Replace the potential sensor simultaneously with the potential sensor PCB. When mounting it, be sure to fit the boss at its rear in the hole on the rear side of the copier; then, match it on the front side, and screw it in place.

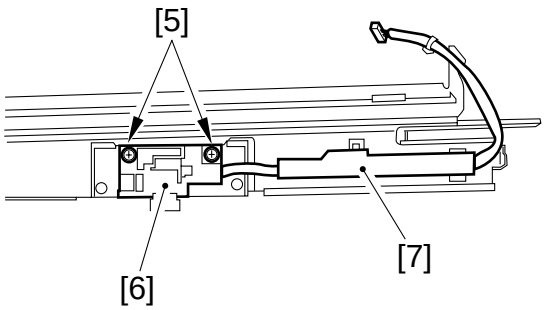


Figure 6-B706

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3. Removing the Primary Charging Assembly

1) Open the front cover.
2) Remove the inside cover (process unit).
3) Disconnect the connector [1]; while shifting the charging assembly fixing plate [2] to the left, slide out the primary charging assembly [3].

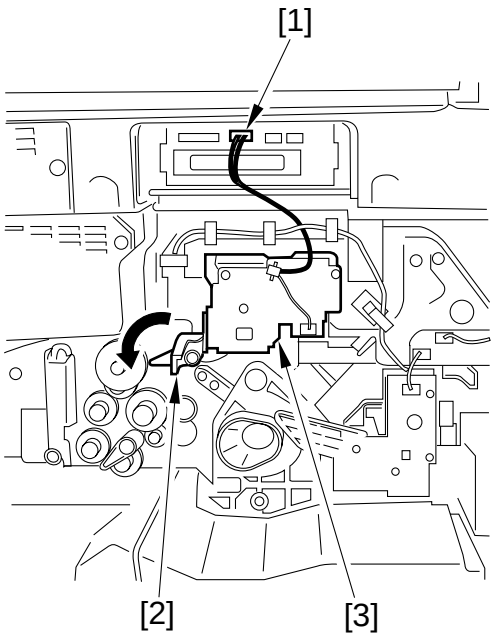


Figure 6-B707

4. Removing the Pre-Transfer Charging Assembly

1) Open the front cover.
2) Remove the inside cover (process unit).
3) Disconnect the connector [1]; while shifting the charging assembly fixing plate [2] to the right, slide out the pre-transfer charging assembly [3].

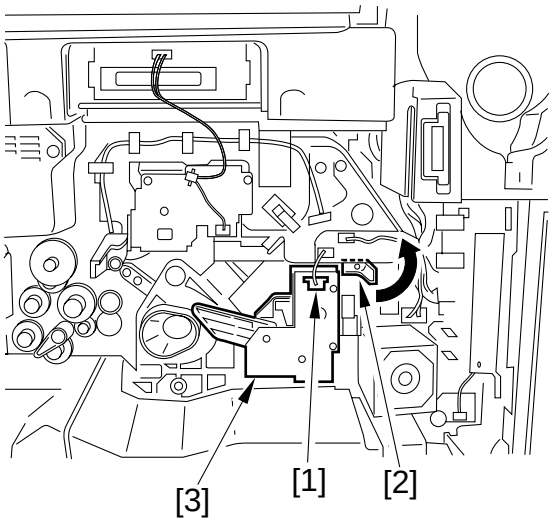


Figure 6-B708

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5. Removing the Dust-Collecting Roller

1) Remove the pre-transfer charging assembly.
2) Remove the two screws [1], and detach the motor cover [2].

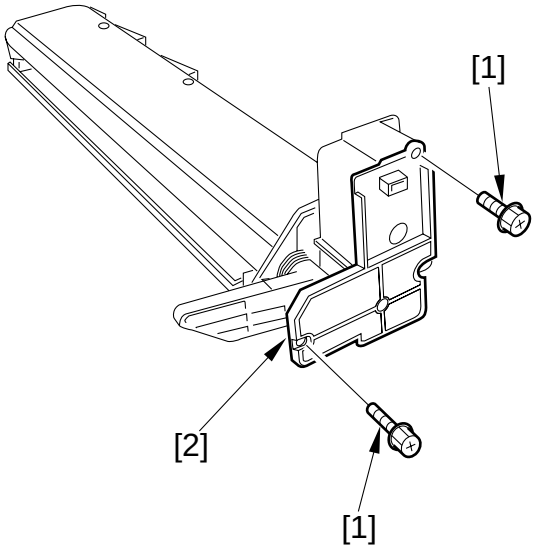


Figure 6-B709

3) Remove the dust-collecting roller arm [3] and the twisted spring [4]; then, detach the dusts-collecting roller [5].

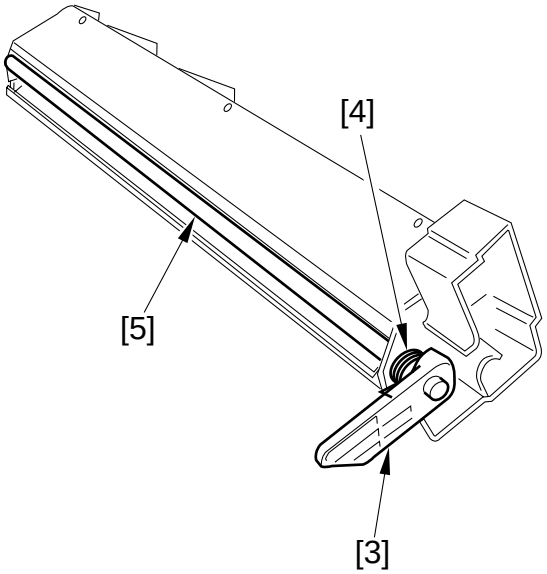


Figure 6-B710

6. Removing the Transfer/ Separation Charging Assembly

1) Open the front cover.
2) Slide out the fixing/feeding assembly.
3) Remove the screw [1], and detach the charging cover [2].

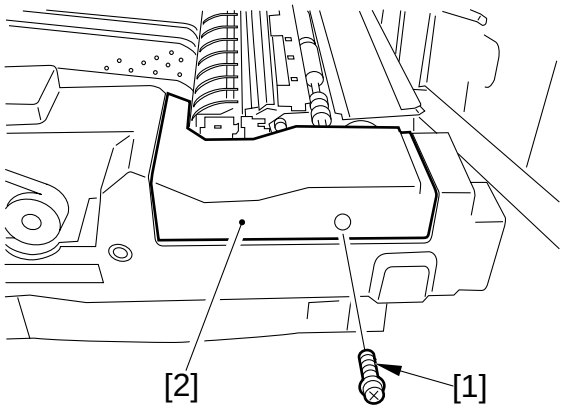


Figure 6-B711

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4) Remove the screw [3], and detach the fixing plate [4]; then, disconnect the connector [5], and detach the transfer/separation charging assembly [6].

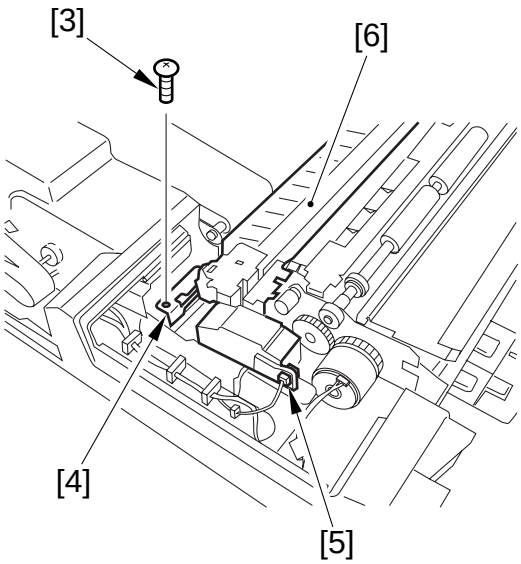


Figure 6-B712

Points to Note When Mounting

- The transfer/separation charging assembly is equipped with a positioning boss on its front and rear.
  When mounting the assembly, be sure to hook the bosses on the cut-offs in the stay.
- If the charging assembly cleaner is on the front side, the home position detecting microswitch can become damaged; be sure to set the charging cleaner at the center.

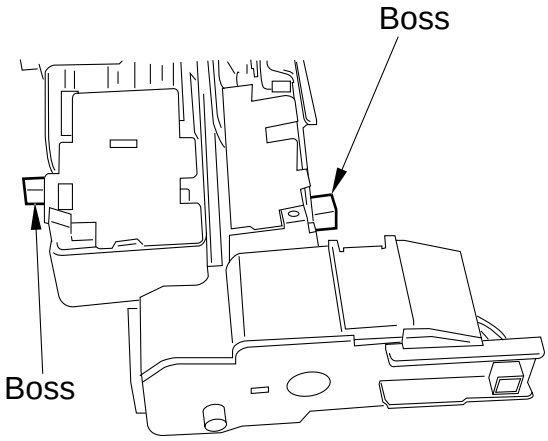


Figure 6-B713

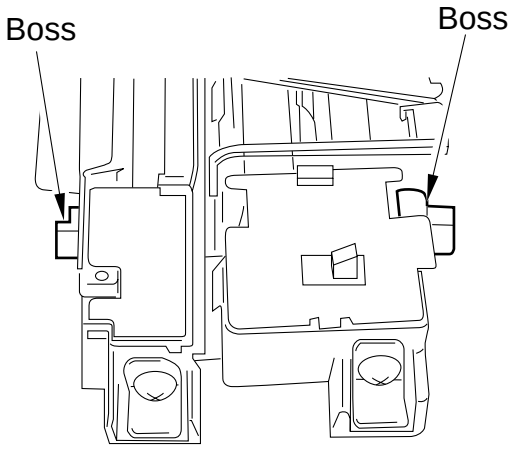


Figure 6-B714

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C. Charging Wire

1. Outline

The primary, pre-transfer, and transfer/separation charging wire are used around the photosensitive drum, each of a 0.06mm diameter.

2. Removing the Wire Cleaner of the Primary Charging Assembly

1) Move the clip mount [1] to the rearmost position, and remove the screw [2] to detach the support plate [4] of the wire cleaner motor shaft [3]; then, take out the clip mount [1] through the opening in the shielding plate [5] together with the wire cleaner motor shaft [3].
2) Pick the wire cleaner with radio pliers, and release the hook with your fingers.

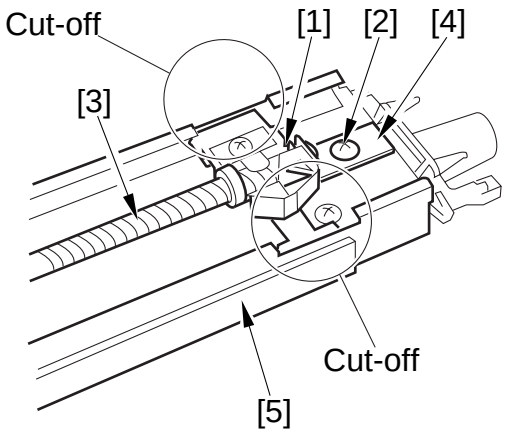


Figure 6-C701

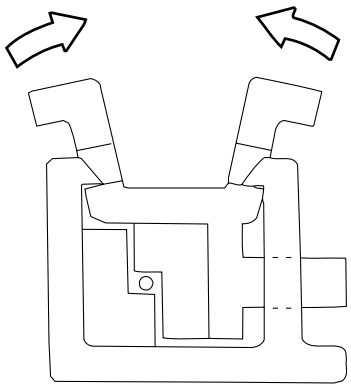


Figure 6-C702

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3. Removing the Wire Cleaner of the Transfer Separation Charging Assembly

1) Remove the transfer/separation charging assembly.
2) Move the felt holder [1] to the frontmost position.

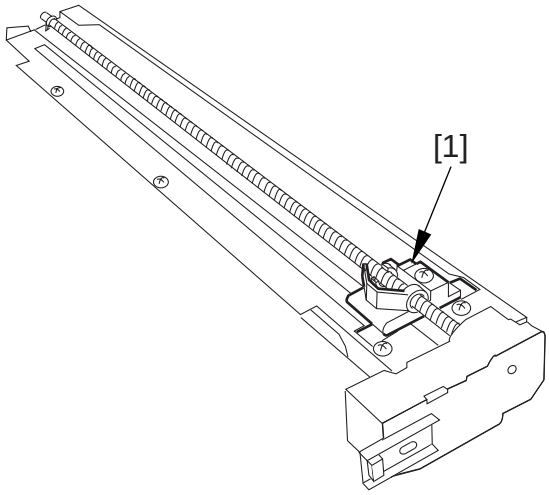


Figure 6-C703

3) Remove the motor cover [2] together with the motor.

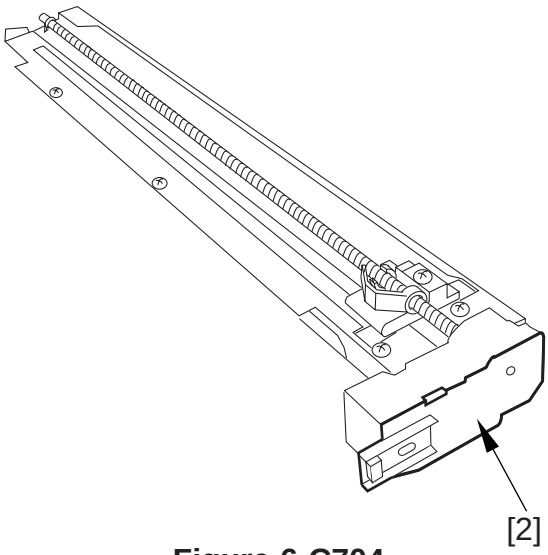


Figure 6-C704

4) Remove the E-ring [3], and pull the lead screw [4] to the front and then up to detach.

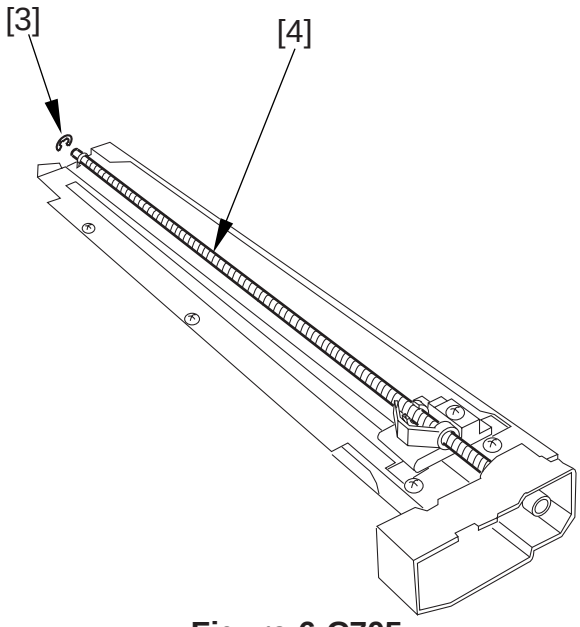


Figure 6-C705

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5) Take out the felt holder [1] through the cut-offs in the shielding plate [5].
6) Pick the wire cleaner with radio pliers, release the hook with your fingers. (See Figure 6-C702.)

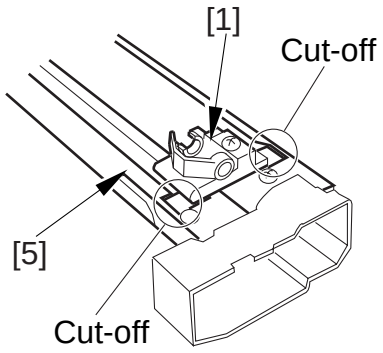


Figure 6-C706

4. Routing the Charging Wire

As a rule, the charging wire (except the grid wire) is routed in the same way for all charging assemblies; the following uses the charging assembly:

1) Remove the screw one each [1], and detach the shielding plates (left/right) [2].
To prevent deformation (slack) of the primary charging assembly, be sure to work on the left and right shielding plates separately. (Do not loosen the screws on both left and right shielding plates.)

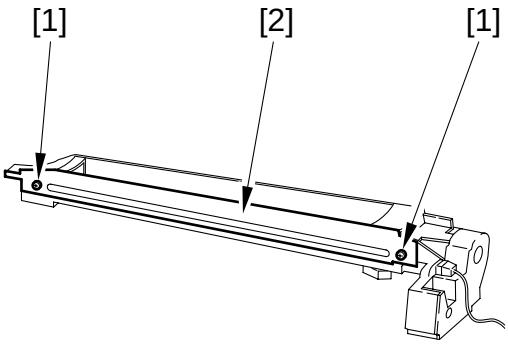


Figure 6-C707

2) Remove the wire cleaner.

Caution:
For other charging assemblies, remove the lids (2 pcs.).

3) Free a length of about 5cm from the charging wire reel (wire diameter 0.06 mm), and form a loop on the end (2mm in diameter).

Reference:
When forming a loop, wind the wire around the hex key once, and twist the hex key three to four times; then, twist the charging wire to form a loop easily.

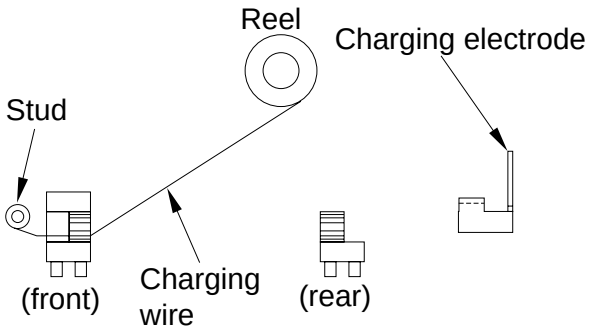


Figure 6-C708

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4) Cut off the twisted end of the wire (excess) with a nipper.
5) Hook the loop on the stud.
6) At the rear side, hook the charging wire on the charging wire positioner; then, hook and twist the charging wire tensioning spring on the charging wire.

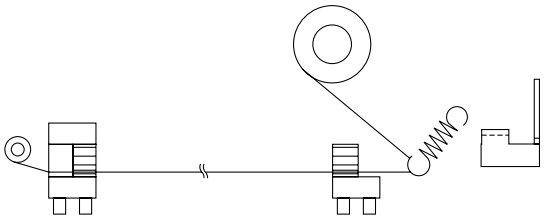


Figure 6-C709

7) Cut the excess charging wire with a nipper.
8) Pick the end of the charging wire tensioning spring with tweezers, and hook it on the charging wire electrode. (In the case of the pre-transfer charging assembly, hook the spring on the pin at the front.)

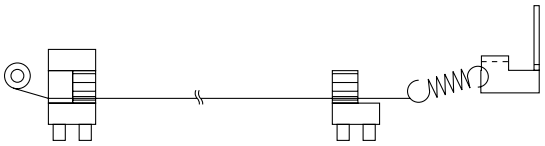


Figure 6-C710

Caution:
Check the following:
- The charging wire must not be bent or twisted.
- The charging wire must be in the V-groove of the charging wire positioned.

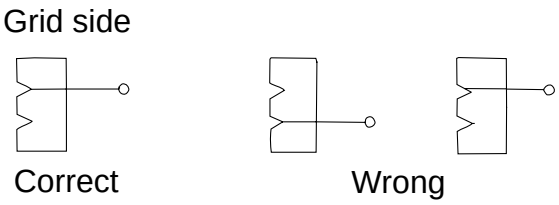


Figure 6-C711

9) Mount the cushion at the front of the charging wire (except the primary charging assembly).
10) Mount the shielding plate (left, right).

Caution:
For other charging assemblies, mount the lids (2 pcs.).

11) Mount the wire cleaner. (At this time, make sure that the orientation of the wire cleaner is correct.)
12) Wipe the charging wire with lint-free paper moistened with alcohol.

5. Routing the Grid Wire for the Primary Charging Assembly

1) Check to make sure that the four screws used to keep the blocks and the shielding plate (front, rear) in place; then, hook the end of the charging wire on stud A; after routing the charging wire for 41 runs, hook it on studs, B, C, and D; then, lead it through the two washers [1], and turn it 1/2 over the screw [2] to keep it in place.

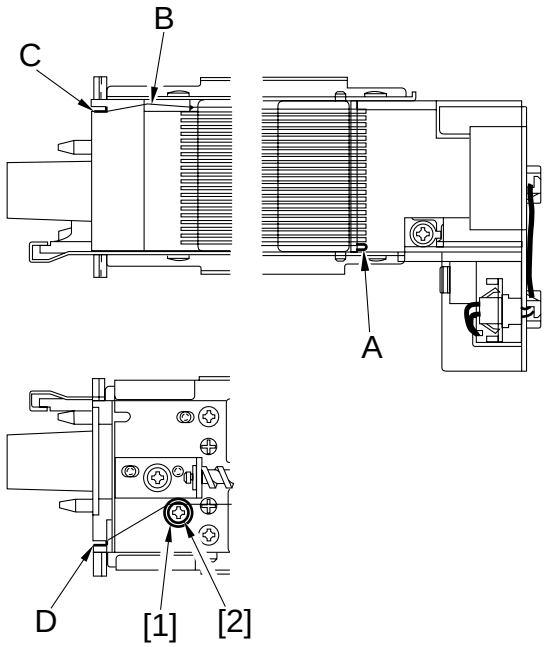


Figure 6-C712

2) Loosen the screws [3], [4], [5], and [6]; then, tighten the screw [7] at a torque of 1.5 ±0.2 kg · cm; then, tighten the screws [3], [4], [5], and [6] in order at a torque of 10 kg · cm or more.

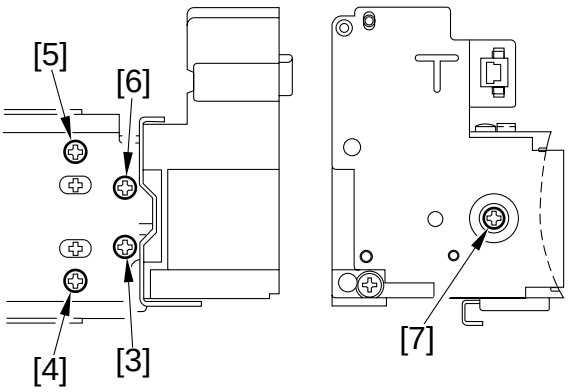


Figure 6-C713

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6. Adjusting the Height of the Charging Wire

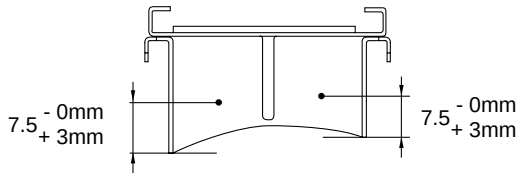
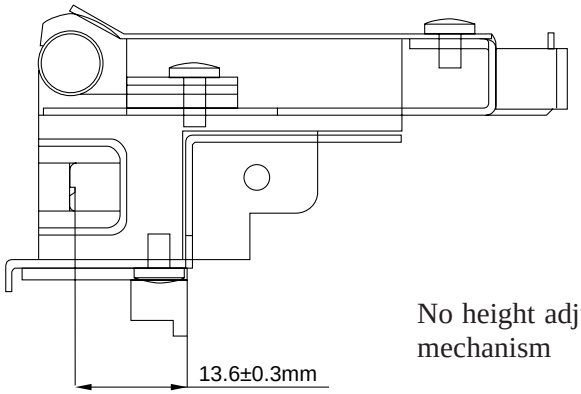
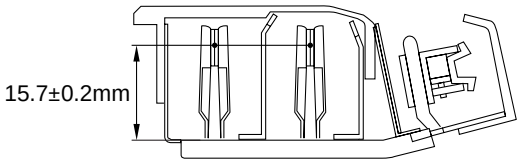
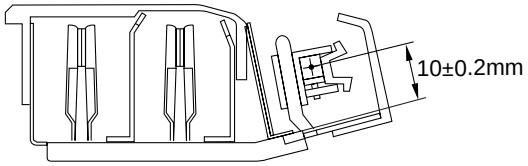
Charging assembly	Height of the charging wire
Primary	
Pre-transfer	 No height adjusting mechanism
Transfer	
Separation	

Figure 6-C714

Reference:

The height of the charging wire for the primary assembly and the transfer charging assembly may be adjusted by turing the screw found on the back of the assemblies. A single turn of the screw changes the height by about 0.7mm.

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D. Process Unit

1. Removing the Process Unit

1) Open the front cover.
2) Remove the developing assembly. (See E. "Developing Assembly.")
3) Slide out the fixing/feeding unit, and place the drum protective sheet.
4) Remove the inside cover (process unit).
5) Slide out the primary charging assembly [1] and the pre-transfer charging assembly [2].

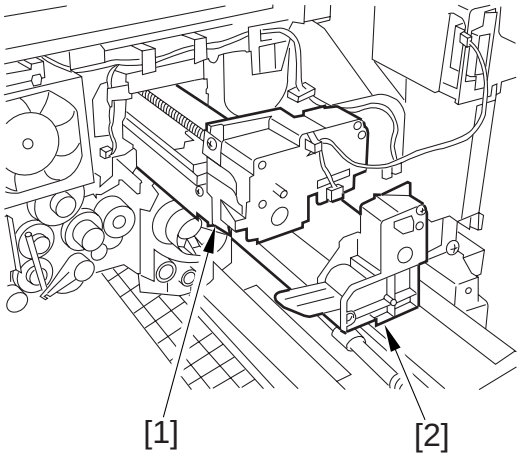


Figure 6-D701

6) Fit the drum stop tool [3]; then, remove the screw [4], and detach the fixing screw [5].
7) Remove the three screws [6], and slide out the process unit [7].

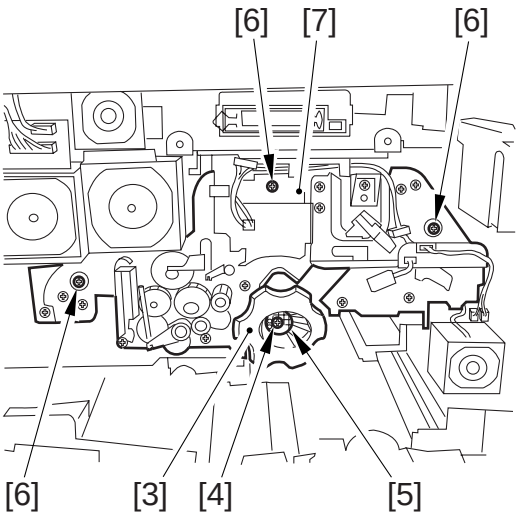


Figure 6-D702

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8) Slide out the process unit [7] as far as possible; while holding the grips, detach it by lifting it.

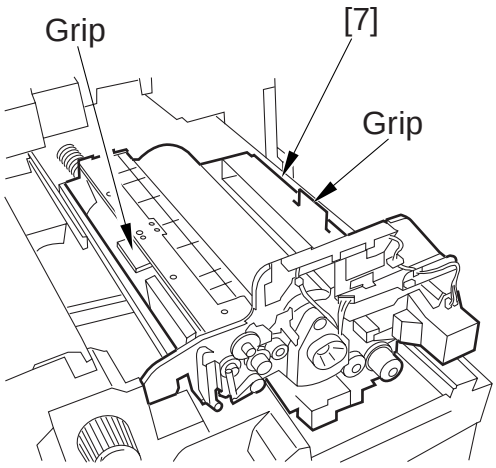


Figure 6-D703

Caution:
When placing the process unit after removal, rotate the kit support plate [1] counterclockwise so as to keep a distance from the floor.

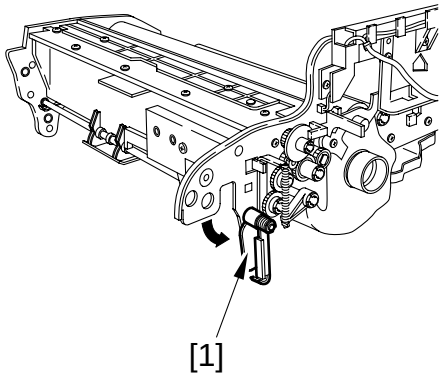


Figure 6-D704

Points to Note When Removing the Photosensitive Drum

[1] When you have removed the photosensitive drum, do not rotate the magnet roller of the cleaner unit. Doing so could cause leakage of toner.

[2] When removing the photosensitive drum or mounting it, do not rotate it counterclockwise to avoid bending of the blade.

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2. Mounting the Process Unit

Mount the process unit by reversing the steps used to remove it. When placing it on the slide rails, however, pay attention to the areas indicated in the figures.

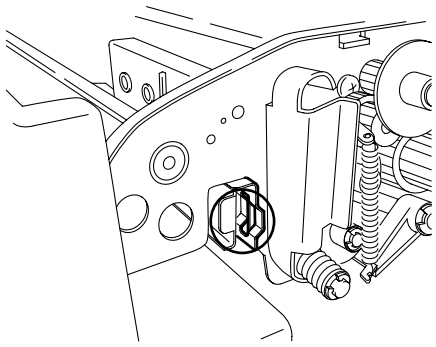


Figure 6-D705

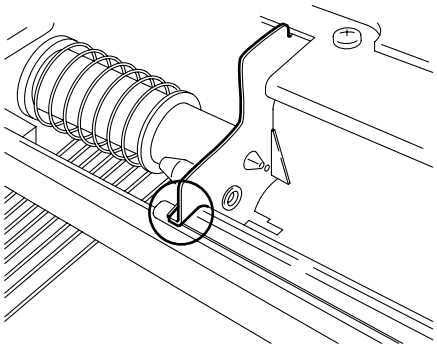


Figure 6-D706

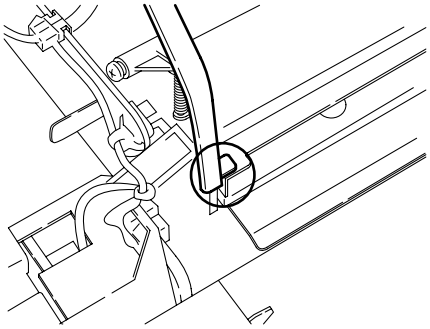


Figure 6-D707

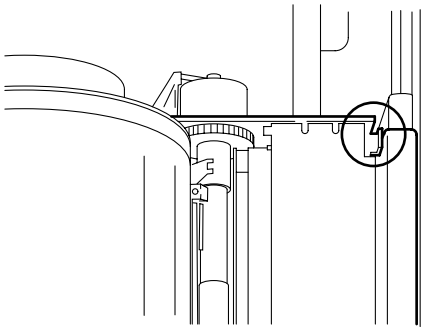


Figure 6-D708

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E. Developing Assembly

1. Removing the Developing Assembly

1) Open the manual feed tray cover; then, remove the four mounting screws [1], and detach the developing assembly stay [2].

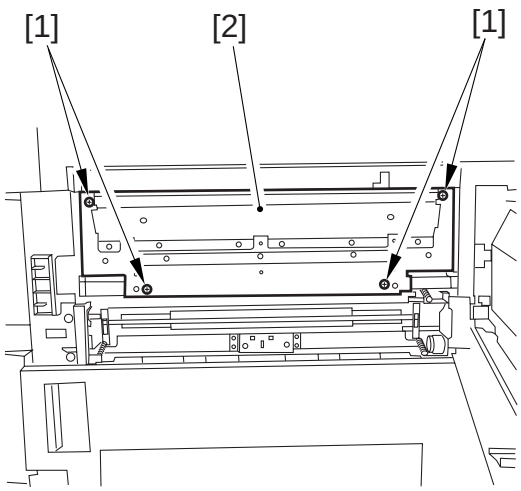


Figure 6-E701

2) Disconnect the two connectors [3], and slide out the developing assembly [4] to the front.

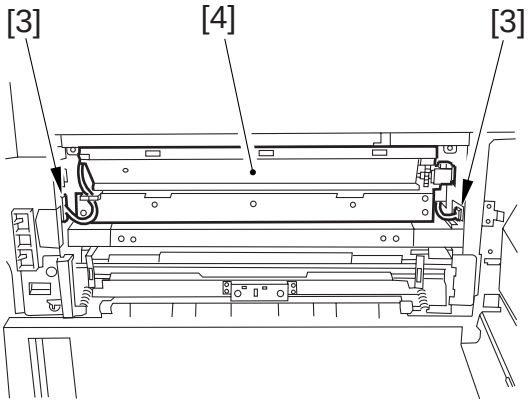


Figure 6-E702

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2. Removing the Hopper

1) Remove the developing assembly from the copier.
2) Remove the four mounting screws [1], and disconnect the connector [2]; then, detach the hopper [3].

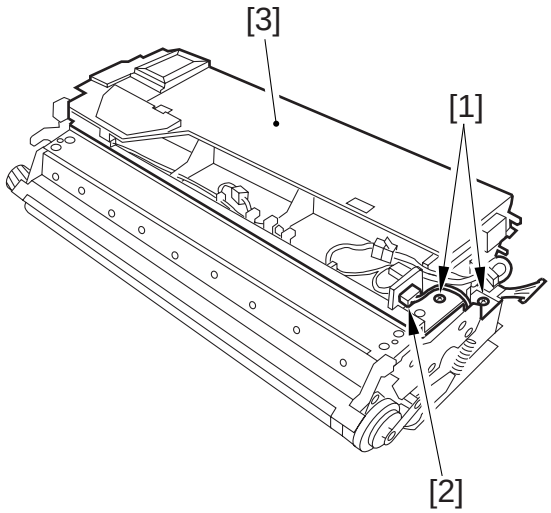


Figure 6-E703

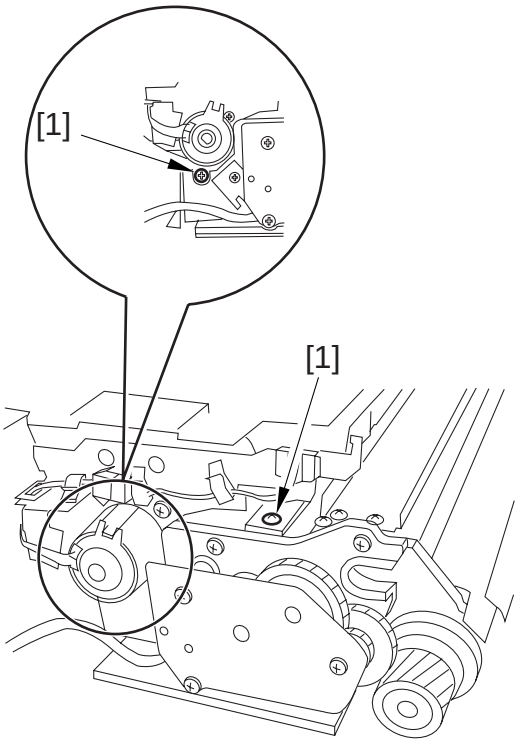


Figure 6-E704

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3. Removing the Blade Unit

1) Remove the four mounting screws [1], and detach the sleeve cover [2].

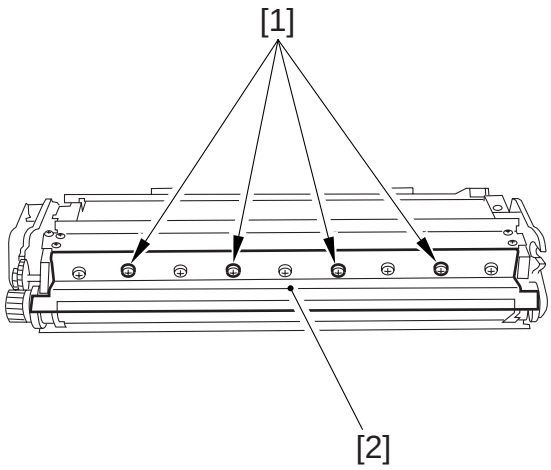


Figure 6-E705

2) Remove the screw [3], and detach the polarity plate [4]; then, remove the five screws [5], and detach the blade [6] together with the mounting plate [7].

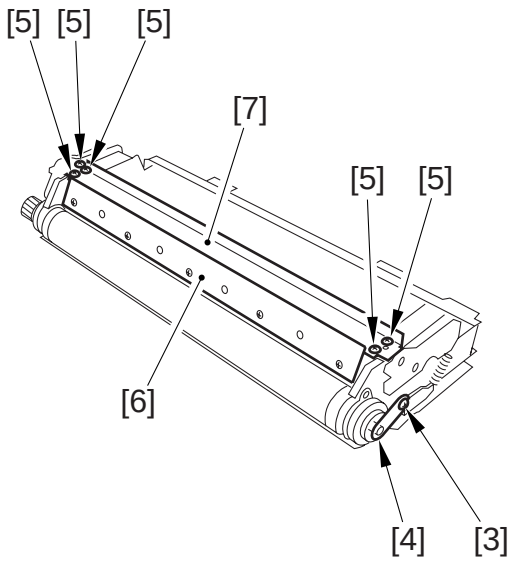


Figure 6-E706

Caution:

The blade must be adjusted to an extremely high accuracy. Do not remove it on its own in the field. (Detach it together with its mounting plate.)

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4. Mounting the Blade

Mount the blade by reversing the steps used to remove it.

1) Butt the blade mounting plate against the developing assembly, and secure it in place with five screws.
   Be sure to put copy paper over the developing cylinder for protection before starting to mount the blade.
2) Mount the polarity plate with a screw.

5. Removing the Developing Cylinder

1) Remove the developing assembly from the copier.
2) Remove the blade unit.
3) Remove the three mounting screws [1] from the rear, and detach the deceleration gear retainer [2].

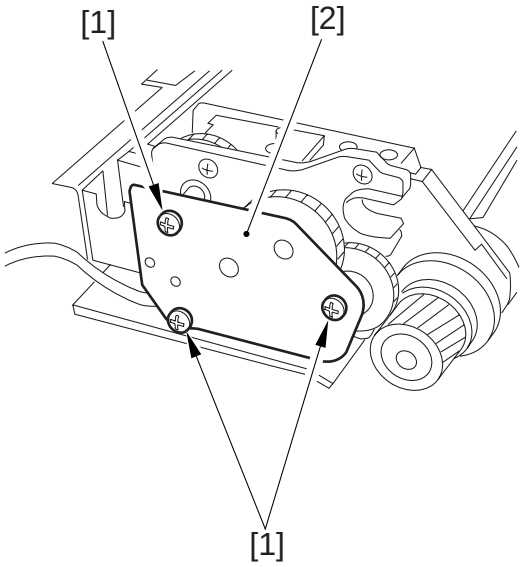


Figure 6-E707

4) Remove the three gears [3].

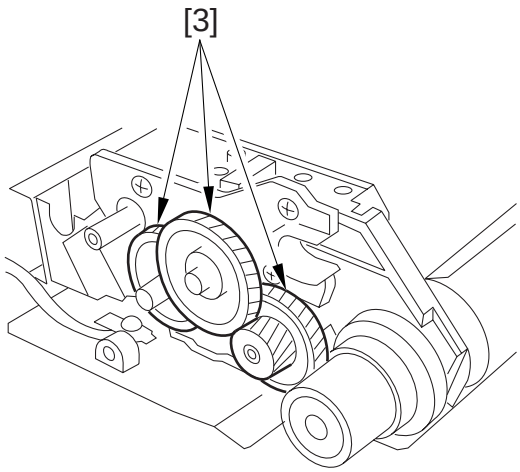


Figure 6-E708

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5) Remove the E-ring [4], and detach the pressure arm [5].

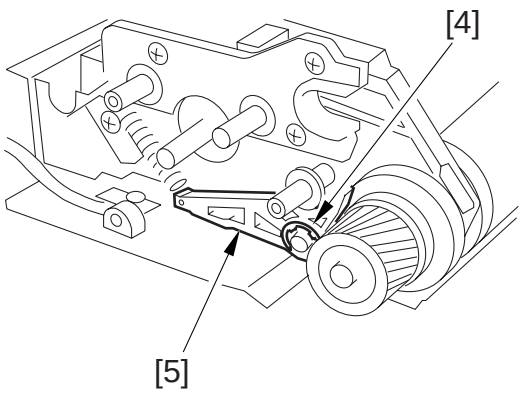


Figure 6-E709

6) Remove the E-ring [6], gear [7], pressure roll [8], washer [9], grip ring [10], seal [11], butting roll [12], washer [9], and bearing [13] in the order indicated.

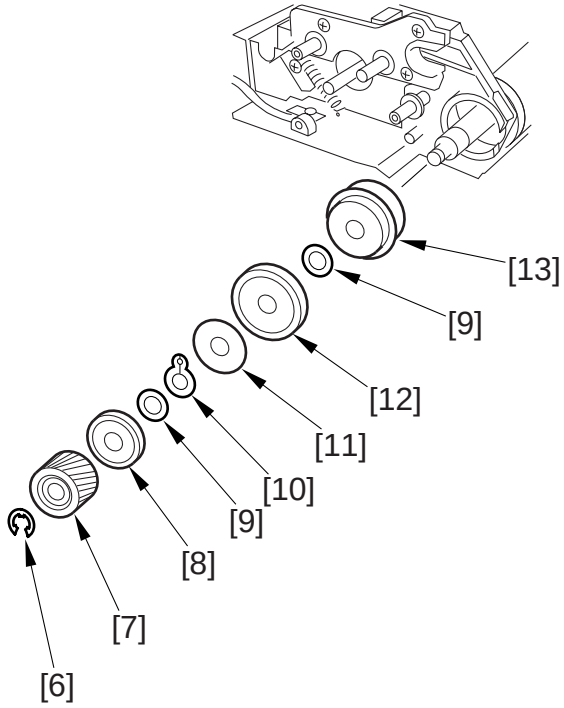


Figure 6-E710

7) Remove the E-ring [14] and the pressure arm [15] at the front.

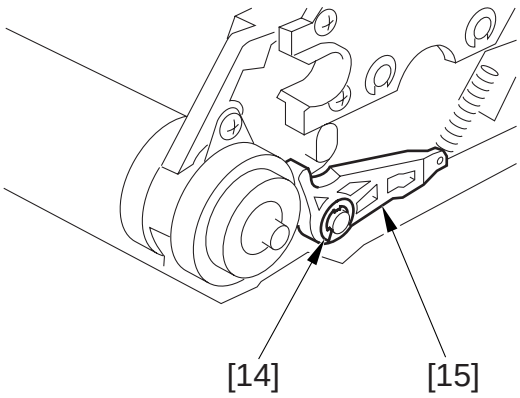


Figure 6-E711

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8) Remove the C-ring [16], washer [17], pressure roll [18], seal [19], washer [17], butting roll [20], C-ring [16], and bearing [21]; the, remove the two screws [22], and detach the bushing [23] and then the developing sleeve [24].

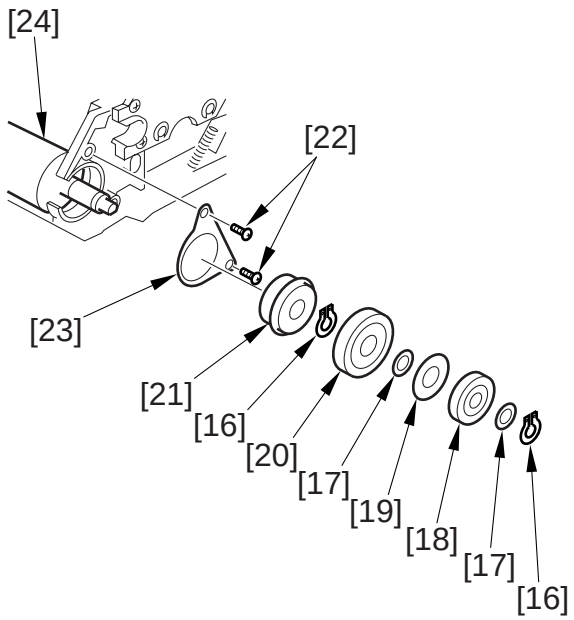


Figure 6-E712

Caution:
Do not leave fingerprints or oil on the surface of the developing cylinder. Wipe off any with lint-free paper. (Do not use solvent.)

Points to Note When Mounting the Developing Cylinder
Both front and rear sides of the developing assembly and the developing cylinder are equipped with a magnetic seal plate.
When mounting the developing cylinder, take care not to bring the magnetic seal plate into contact with the surface of the cylinder to avoid damage.

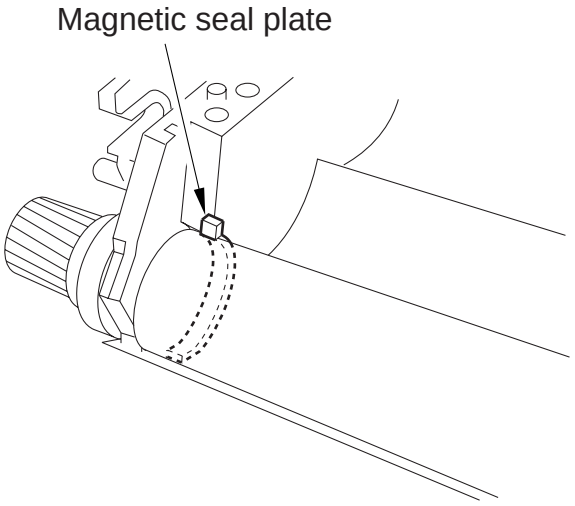


Figure 6-E713

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F. Drum Cleaner Unit

Construction

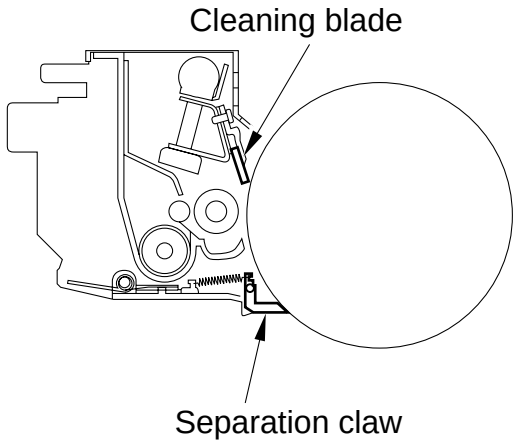


Figure 6-F701

1. Removing the Cleaning Blade

1) Open the front cover.
2) Slide out the process unit.
3) Remove the screw [1], and detach the reciprocating arm [2].

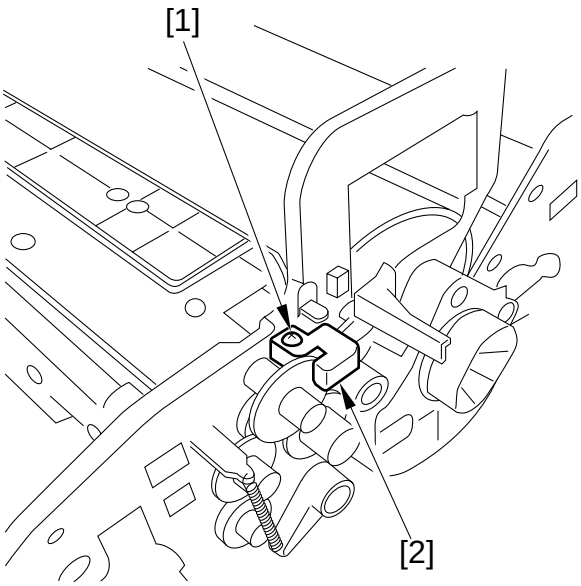


Figure 6-F702

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4) Disconnect the connector [3], and remove the five screws [4]; then, while pushing it toward the rear, detach the cleaning blade together with the mounting plate [5].

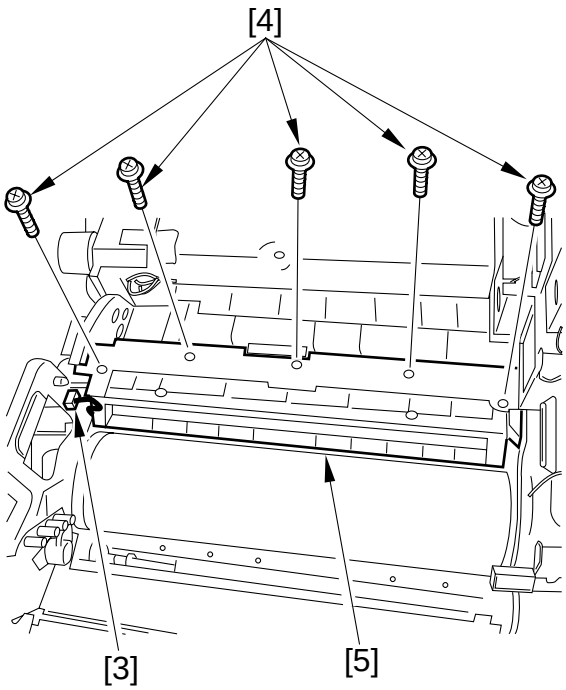


Figure 6-F703

5) Remove the E-ring [6], and detach the pressure plate [7]; then, detach the cleaning blade assembly [8].

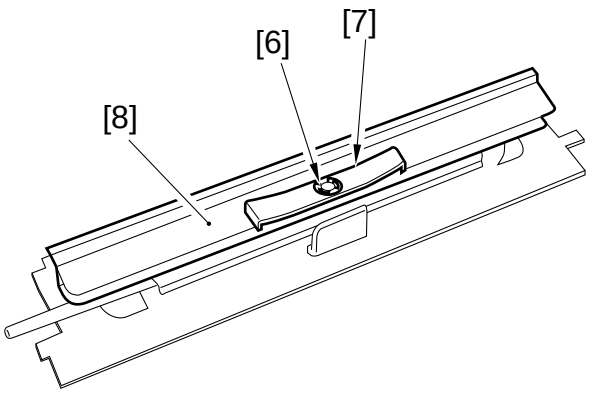


Figure 6-F704

6) Remove the five screws [9], and detach the blade retaining plate [10]; then, detach the cleaning blade [11].

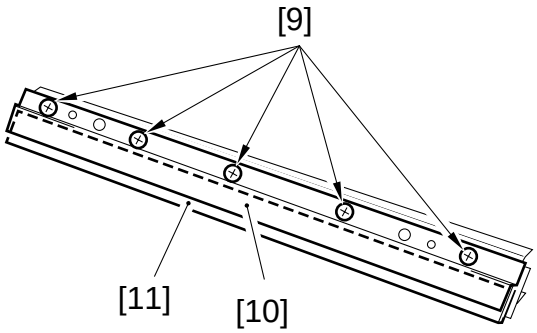


Figure 6-F705

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2. Mounting the Cleaning Blade

1) Butt the cleaning blade [1] against the rear end of the blade retaining plate [2].

Caution:
When butting the cleaning blade, be sure there is not gap.

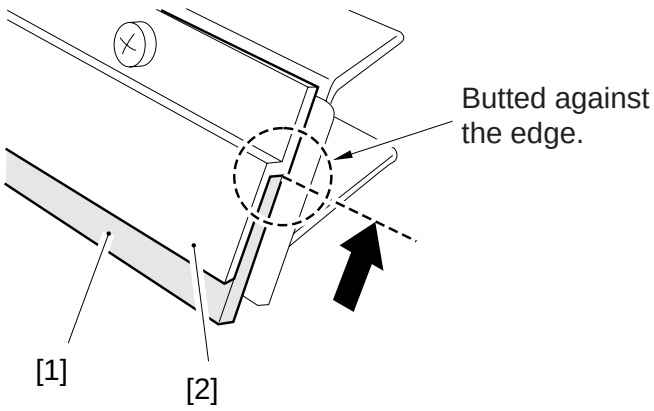


Figure 6-F706

2) Tighten the screws on the blade retaining plate temporarily in the order indicated.

Caution:
When tightening the screws temporarily, be sure to hold the blade down against the end. (See Figure 6-F706.)

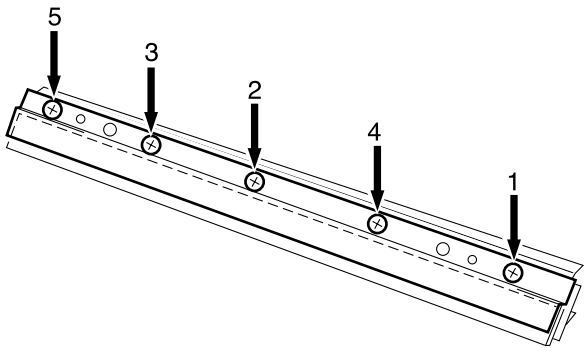


Figure 6-F707

3) Tighten the screws on the blade retaining plate fully in the order indicated.

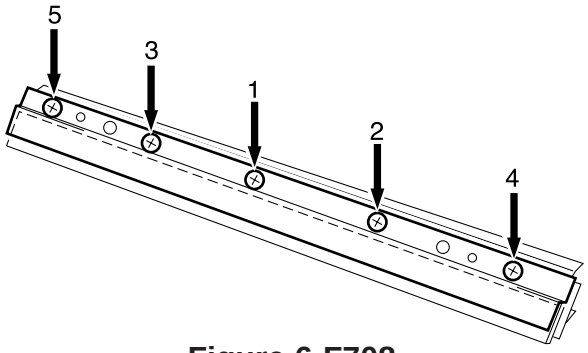


Figure 6-F708

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Caution:
When mounting the cleaning blade, be sure to put the blade auxiliary plate between the blade support plate and the blade back plate.

Caution:
After mounting the cleaning blade, turn the drum; if toner slips off the cleaning blade at this time, repeat the foregoing steps.
If the problem is not corrected after tightening the screws, replace the cleaning blade.

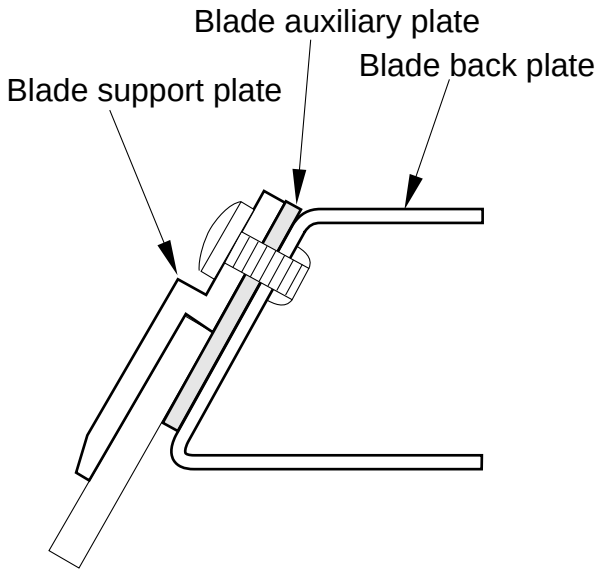


Figure 6-F709

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G. Separation Claw/ Separation Claw Drive Assembly

1) Open the front cover.
2) Take out the process unit.
3) Remove the E-ring [1], and slide out the separation claw holder shaft [2] to the front to detach the separation holder [3].

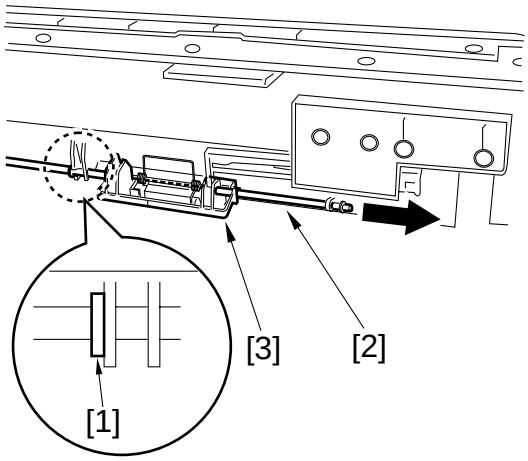


Figure 6-G701

4) Remove the spring [4], and detach the separation claw [5].

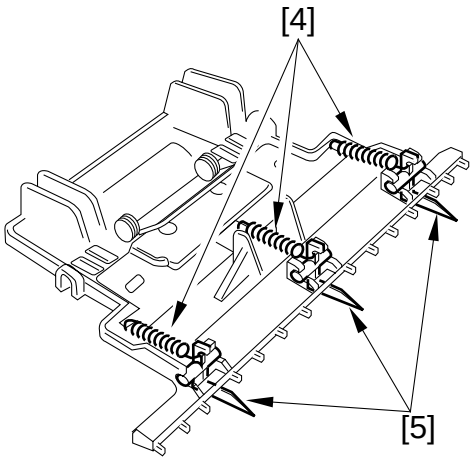


Figure 6-G702

Points to Note When Mounting

When mounting the separation claw holder, be sure that the separation claw holder spring is butted against the drum cleaner case. Further, check to make sure that the rack of the separation claw 3 drive assembly is engaged with the groove in the separation claw holder.

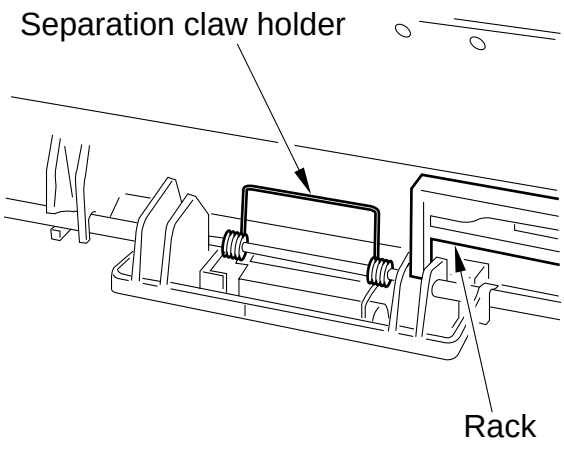


Figure 6-G703

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CHAPTER 7

PICK-UP/FEEDING SYSTEM

This chapter provides descriptions on the copier's operations between pickup and delivery, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

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I . OUTLINE

A. Specifications and Construction

Table 7-101 shows the major functions of the pickup/feeding system.

Item	Description
Paper feeding reference	Center
Paper stacking capacity	Paper deck (right, left) : 1,500 sheets (80 g/m^2) Cassette (3, 4) : 550 sheets (80 g/m^2) Multifeeder : 50 sheets (80 g/m^2)
Paper size switch	Paper deck (right, left) : by the service person Cassette (3, 4) : by the user Multifeeder : by the user
Duplexing system	No-stacking
Related user mode	Turning on and off the cassette selection mechanism Selecting paper icons
Related mechanical adjustment	Deck horizontal registration Cassette horizontal registration Manual feed tray horizontal registration

Table 7-101 Functions

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B. Arrangement of Rollers and Sensors

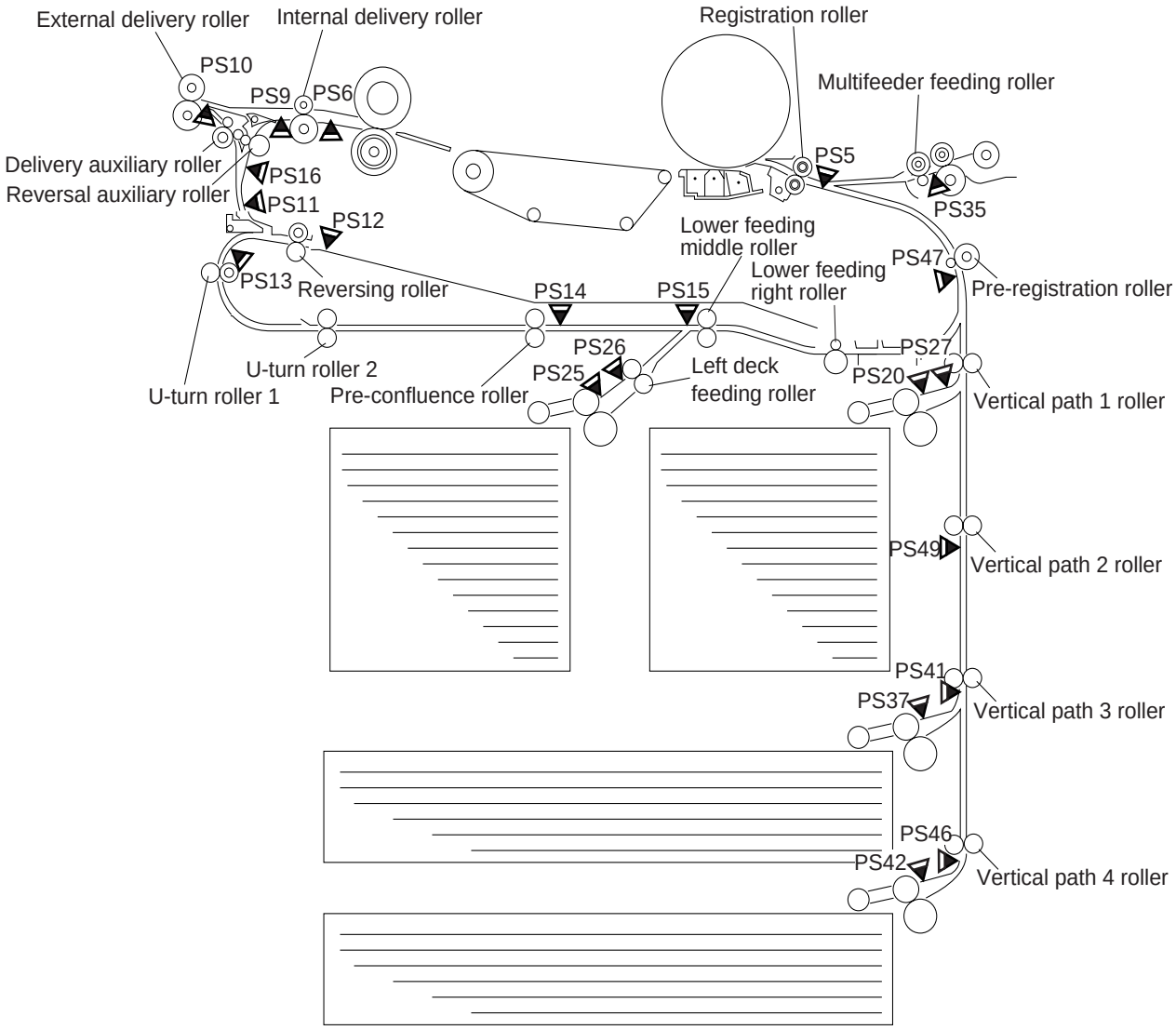


Figure 7-101 Arrangement of Rollers and Sensors

PS5: Registration sensor
PS6: Claw jam sensor
PS9: Internal delivery sensor
PS10: External delivery sensor
PS11: Fixing feeding outlet sensor
PS12: Duplexing reversal sensor
PS13: U-turn sensor
PS14: Pre-confluence sensor
PS15: Post-confluence sensr
PS16: Reversal sensor
PS20: Right deck pickup sensor
PS25: Left deck pickup sensor
PS26: Left deck feed sensor
PS27: Right deck feed sensor
PS35: Multifeeder feed sensor
PS37: Cassette 3 pickup paper sensor
PS41: Vertical path 3 sensor
PS42: Cassette 4 pickup paper sensor
PS46: Vertical path 4 sensor
PS47: Vertical path 1 sensor
PS49: Vertical path 2 sensor

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II . PICKUP ASSEMBLY

A. Control System

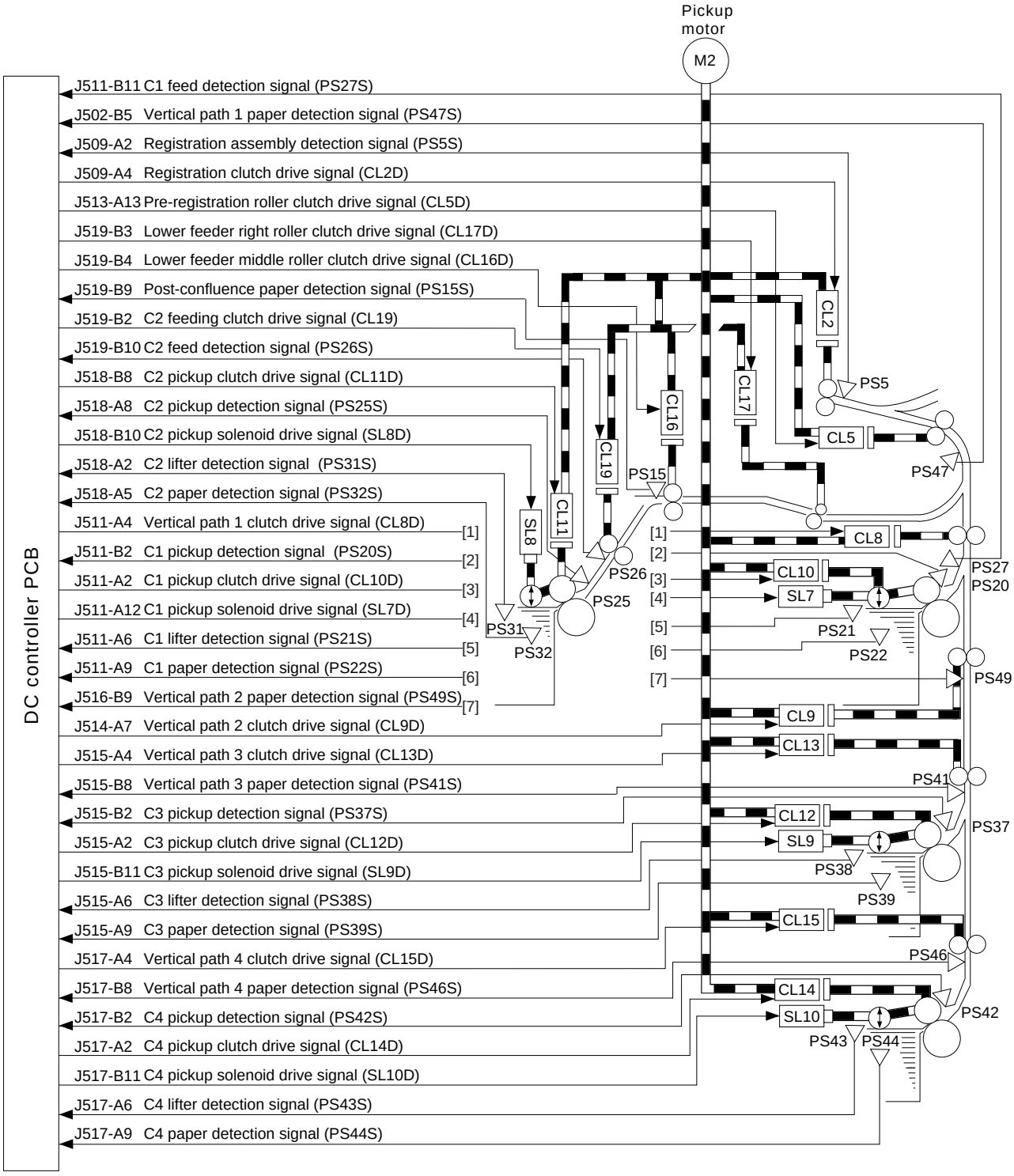


Figure 7-201 Construction of the Drive Mechanism

B. Sequence of Operations (pickup)

1. Right Deck

• A4, 2 Sheets, Continuous

The copier's deck pickup assembly uses separation rollers to separate paper.

🕮 Volume 1>Chapter 5 "Separation Mechanism and Pickup Method"

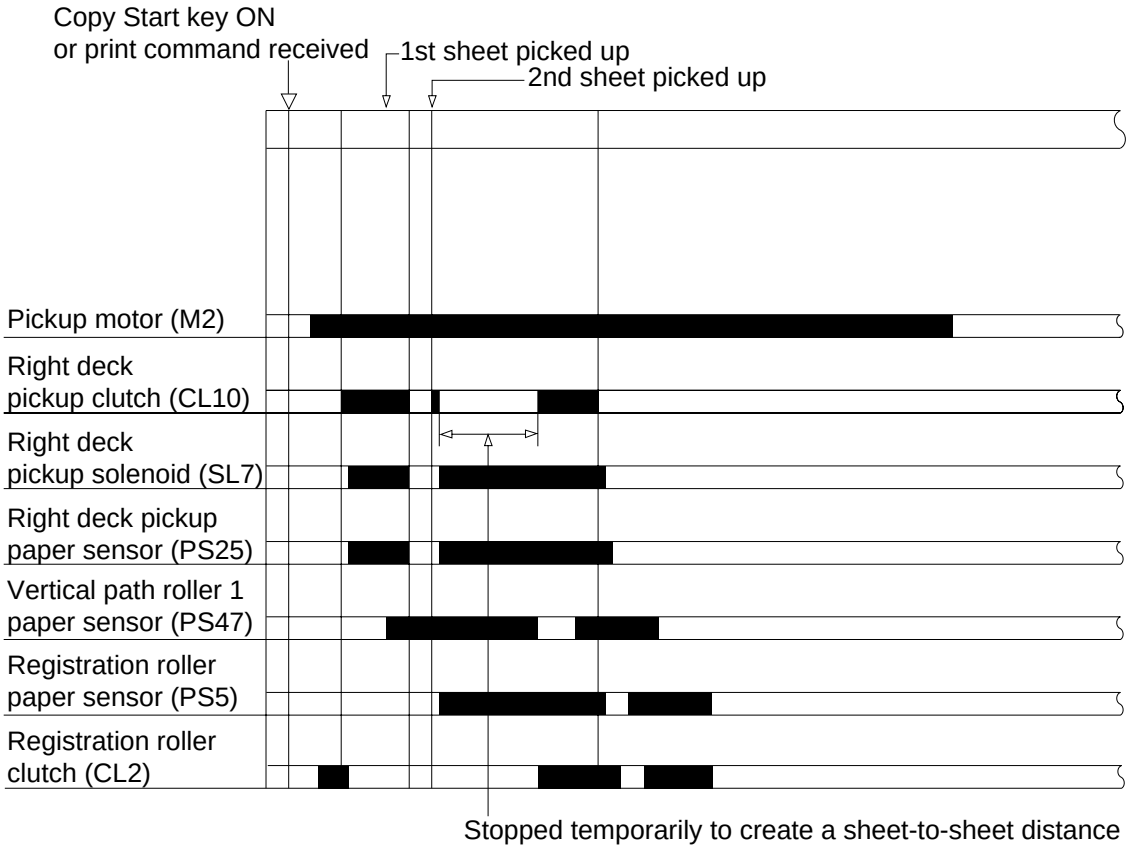


Figure 7-202 Pickup from the Right Deck

Related Service Mode

COPIER>OPTION>CST>C1-DWSW COPIER>OPTION>CST>C2-DWSW COPIER>OPTION>CST>DK-DWSW COPIER>OPTION>CST>C3-DWSW COPIER>OPTION>CST>C4-DWSW	When pickup is from a selected source, the fixing heater temperature control mechanism is switched to thick paper control sequence. • C1: front deck (right) C2: front deck (left) DK: side paper deck C3: cassette 3 C4: cassette 4

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2. Pickup from the Cassette 4

• A4, 2 Sheets, Continuous

The copier's cassette pickup assembly uses separation rollers.

🕮 Volume 1>Chapter 5 "Separation Mechanism and Pickup Method"

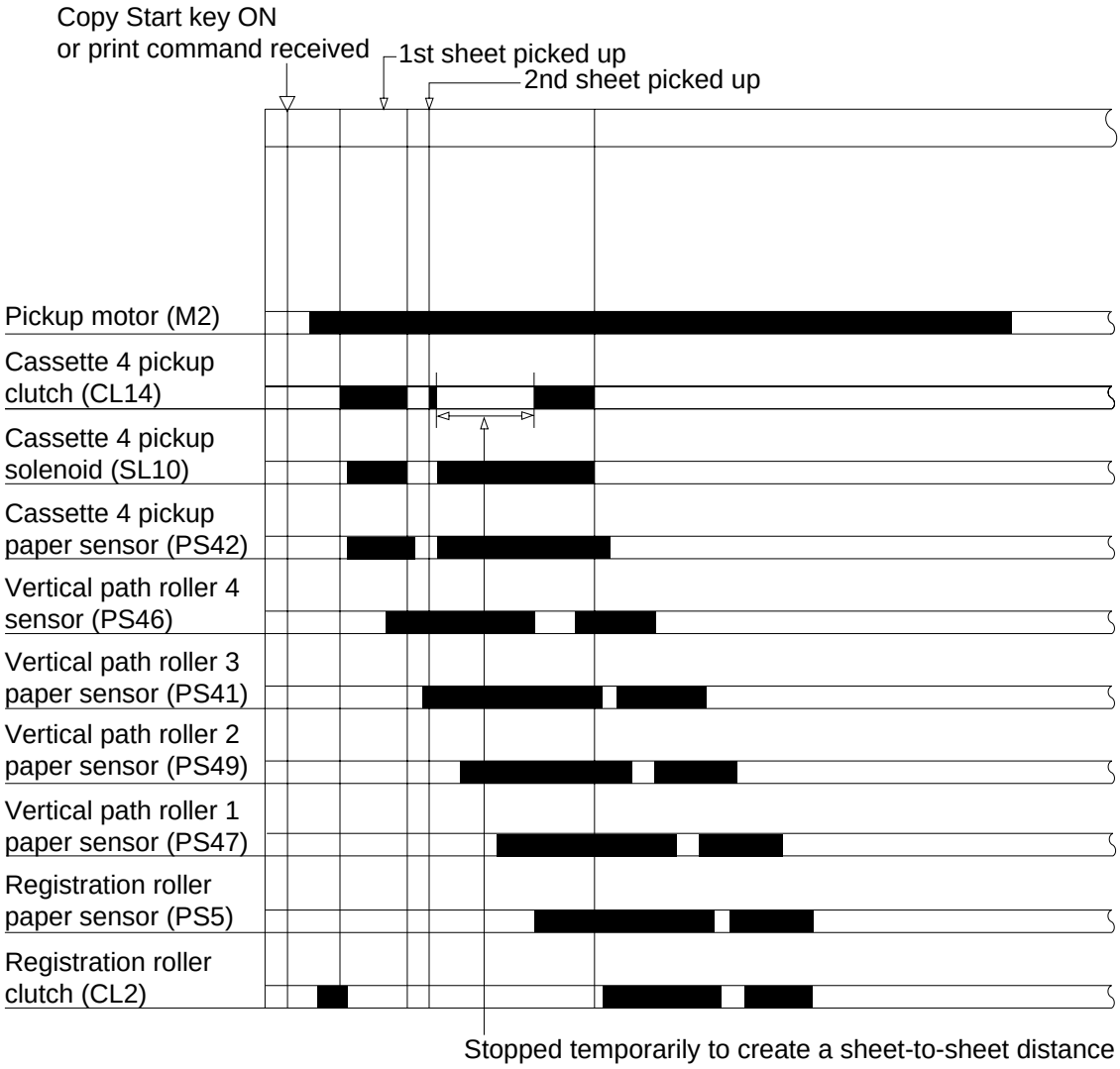

Copy Start key ON
or print command received
1st sheet picked up
2nd sheet picked up
Pickup motor (M2)
Cassette 4 pickup clutch (CL14)
Cassette 4 pickup solenoid (SL10)
Cassette 4 pickup paper sensor (PS42)
Vertical path roller 4 sensor (PS46)
Vertical path roller 3 paper sensor (PS41)
Vertical path roller 2 paper sensor (PS49)
Vertical path roller 1 paper sensor (PS47)
Registration roller paper sensor (PS5)
Registration roller clutch (CL2)
Stopped temporarily to create a sheet-to-sheet distance

Figure 7-203 Pickup from the Cassette 4

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C. Controlling the Pickup Motor (M2)

1. Outline

Table 7-201 shows the functions of the pickup motor control circuit, and Figure 7-204 is a block diagram of the circuit.

Item	Description
Power supply	Supplies 38 V from the relay PCB.
Drive signal	Signal (M2-ON) from the DC controller PCB.
Operating/driving assembly	See Figure 7-201.
Control	On/off control Constant speed control
Error detection	Error code "E015"

Table 7-201

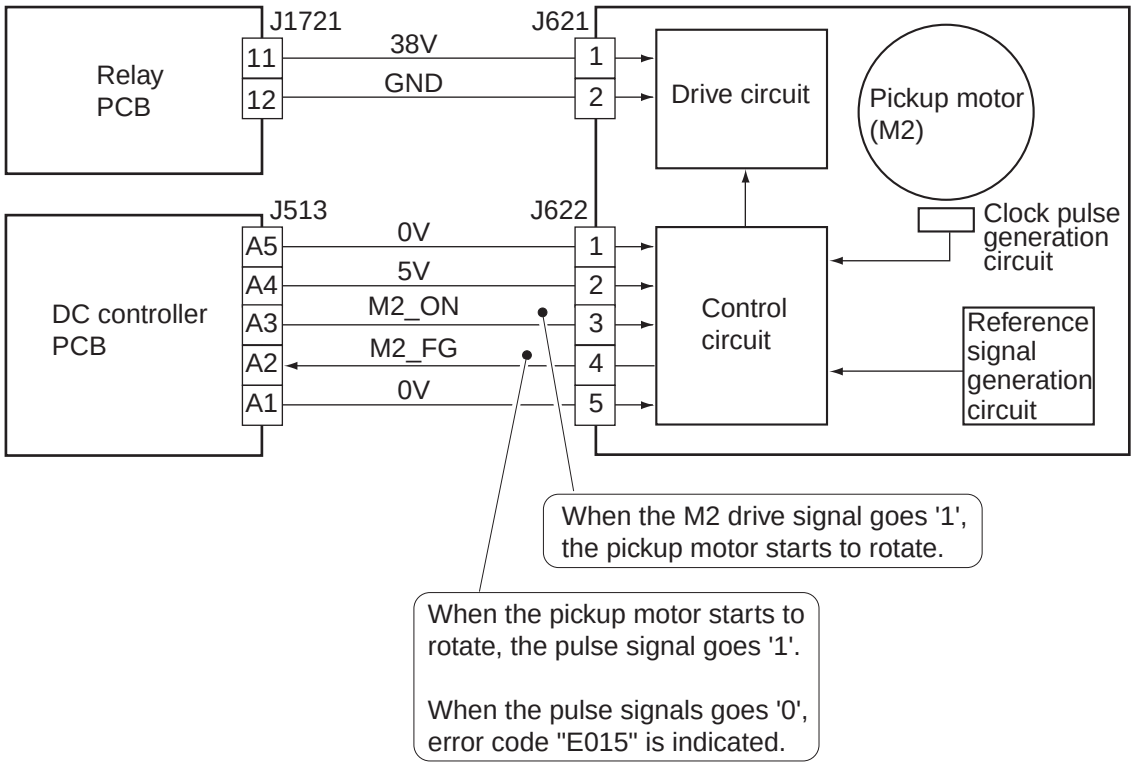


Figure 7-204

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D. Movement of the Lifter

1. Outline

When the deck or the cassette is slid in, the cassette open/closed sensor turns on and, at the same time, the pickup roller starts to move down, causing the light-blocking plate to leave the lifter sensor, driving the cassette lifter motor and, ultimately, moving up the lifter.

The lifter keeps moving up until the lifter sensor detects the surface of paper. (In the case of the deck right/left, a limiter is mounted to stop the lifter if it fails to stop moving up.)

When the deck or cassette open button is pushed, the drive gear of the lifter becomes free to let the lifter move down on its own weight.

	Right deck	Left deck	Cassette 3	Cassette 4
Cassette open/ closed detection	Deck right open/ closed sensor (PS23)	Deck left open/ closed sensor (PS33)	Cassette 3 open/ closed sensor (PS40)	Cassette 4 open/ closed sensor (PS45)
Lifter position detection	Lifter sensor (PS21)	Lifter sensor (PS31)	Lifter sensor (PS38)	Lifter sensor (PS43)
Paper presence/ absence detection	Deck right paper sensor (PS22)	Deck left paper sensor (PS32)	Cassette 3 paper sensor (PS39)	Cassette 4 paper sensor (PS44)
Copy paper level detection	Deck right paper level middle sensor (PS51) Deck right paper level upper sensor (PS52)	Deck lifter paper level middle sensor (PS54) Cassette 2 paper level upper sensor (PS55)	Cassette 3 paper level detection PCB (variable resistor)	Cassette 4 paper level detection PCB (variable resistor)
Lifter upper limiter	Deck right limit sensor (PS24)	Deck left limit sensor (PS34)	---	---
Drive motor	Deck right lifter motor (M13)	Deck lifter motor (M14)	Cassette 3 lifter motor (M16)	Cassette 4 lifter motor (M17)

Figure 7-202 Components

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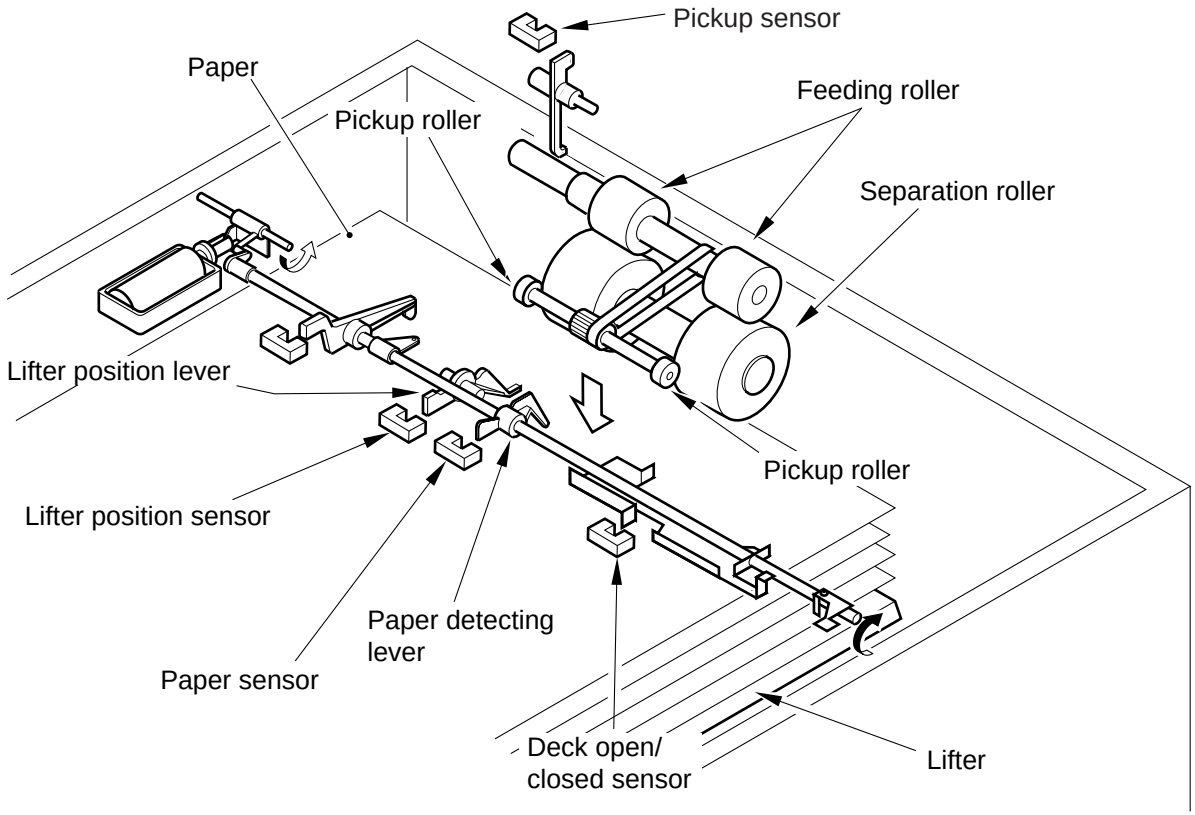


Figure 7-205 Deck

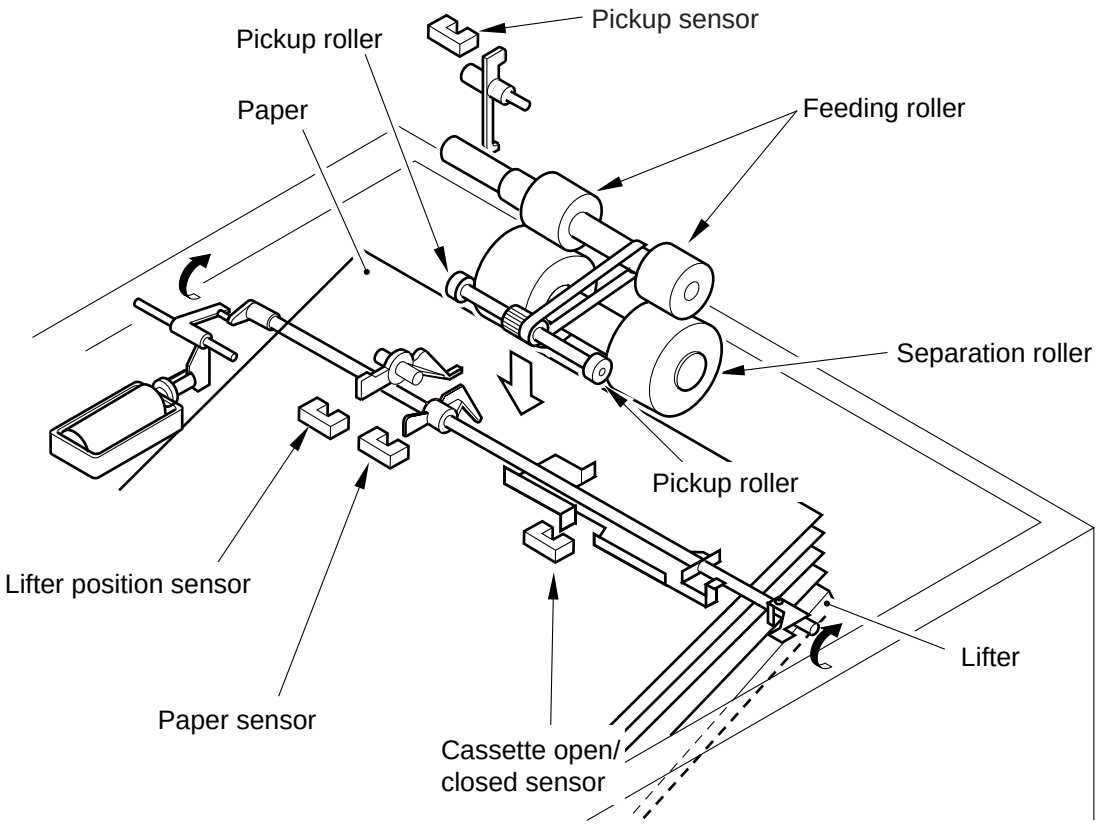


Figure 7-206 Cassette

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2. Lifter Limiter (deck right/left)

When the lifter moves up and the surface of paper reaches the cassette limit sensor, the drive to the lifter motor stops.

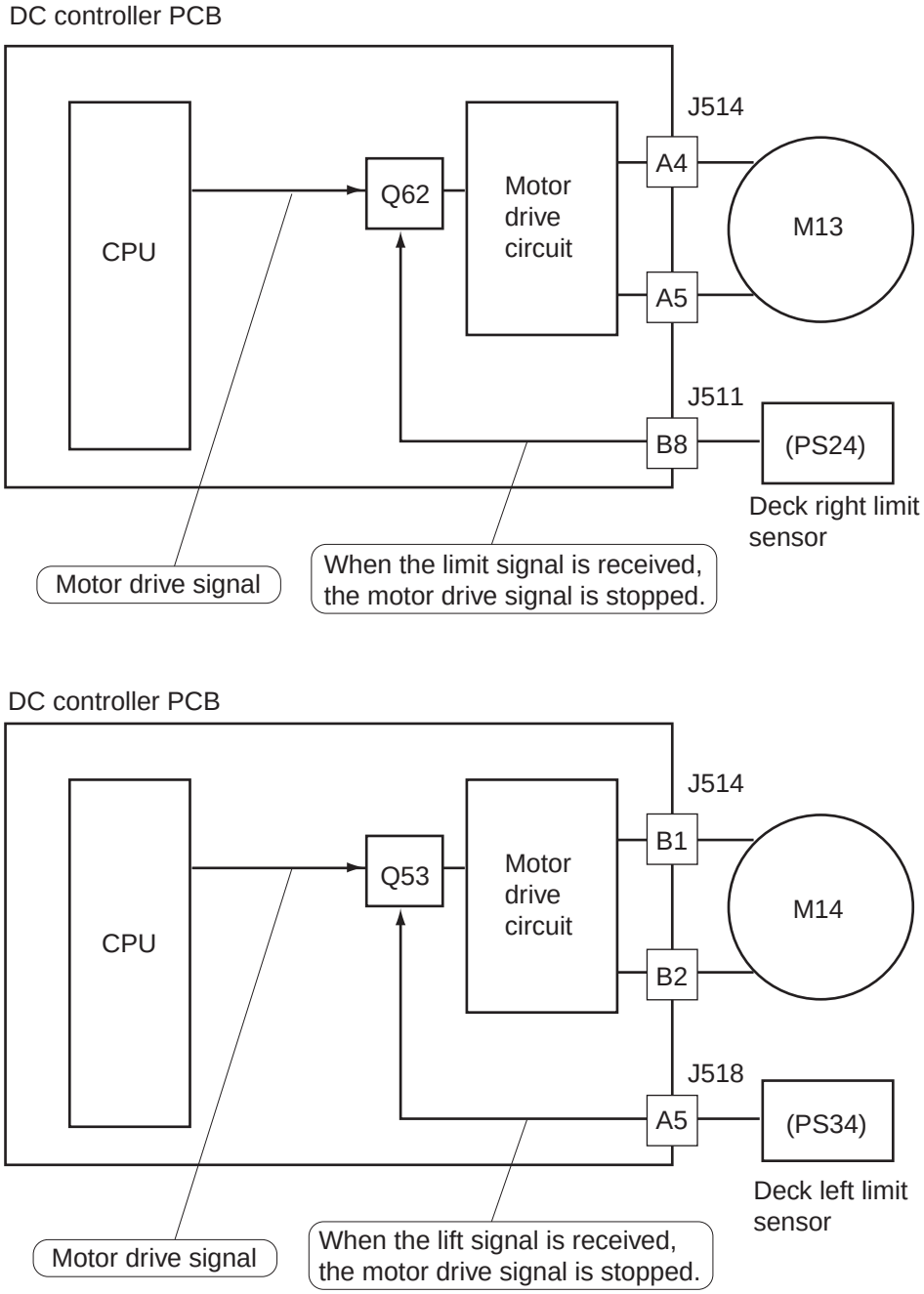


Figure 7-207 Block Diagram of the Limiter

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3. Detecting the Presence/Absence of Paper

The presence/absent of paper inside the deck and the cassette is detected by the cassette paper sensor.

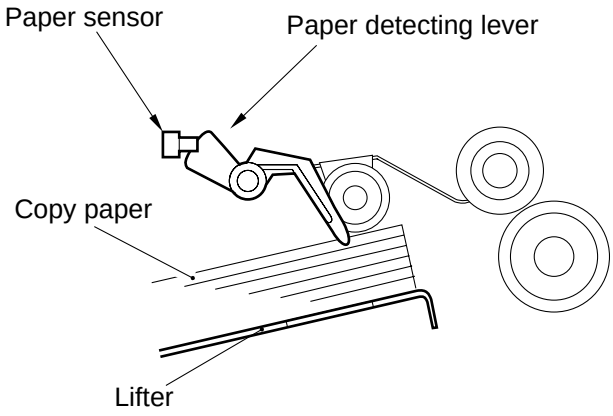


Figure 7-208 Paper Present

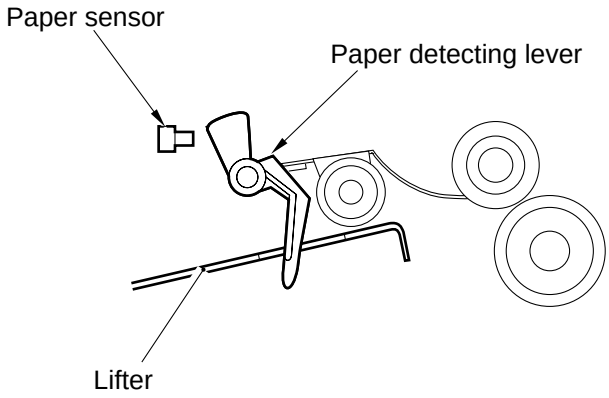


Figure 7-209 Paper Absent

4. Detecting the Level of Paper

a. Outline

The copier indicates the level of paper inside the deck and the cassette in four readings (including No Paper) on the control panel.

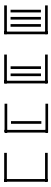


Figure 7-210

3 bars	100% to about 50% of capacity
2 bars	about 50% to about 10% of capacity
1 bar	about 10% of capacity or less
No bar	No paper

Table 7-203

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b. Operation

In the case of the deck right/left, two sensors are used to detect the position of the deck, and combinations of the states of the sensors (on/off) are used to find out the level of paper.

For the absence of paper, an exclusive sensor is used. (See 3. "Detecting the Presence/Absence of Paper.")

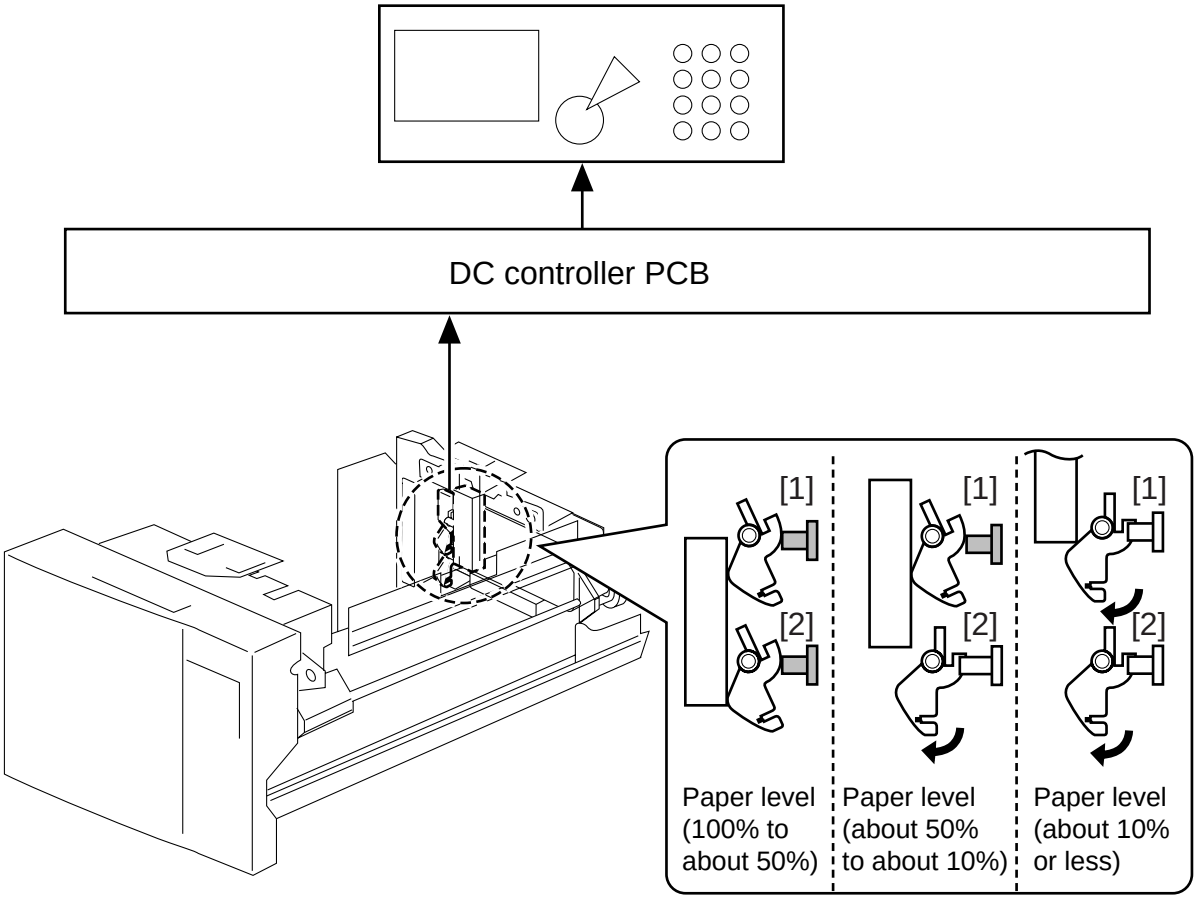


Figure 7-211 Construction of the Mechanism

	Deck right			Deck left		
Paper level	[1] Sensor (PS51)	[2] Sensor (PS52)	Sensor (PS22)	[1] Sensor (PS54)	[2] Sensor (PS55)	Sensor (PS32)
100% to about 50%	ON	ON	ON	ON	ON	ON
About 50% to about 10	OFF	ON	ON	OFF	ON	ON
About 10% or less	OFF	OFF	ON	OFF	OFF	ON
None	OFF	OFF	OFF	OFF	OFF	OFF

Table 7-204 Combinations of Sensor States

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In the case of cassette 3/4, the resistance of the variable resistor operating in conjunction with the movement of the lifter drive shaft is used to find out the level of paper.

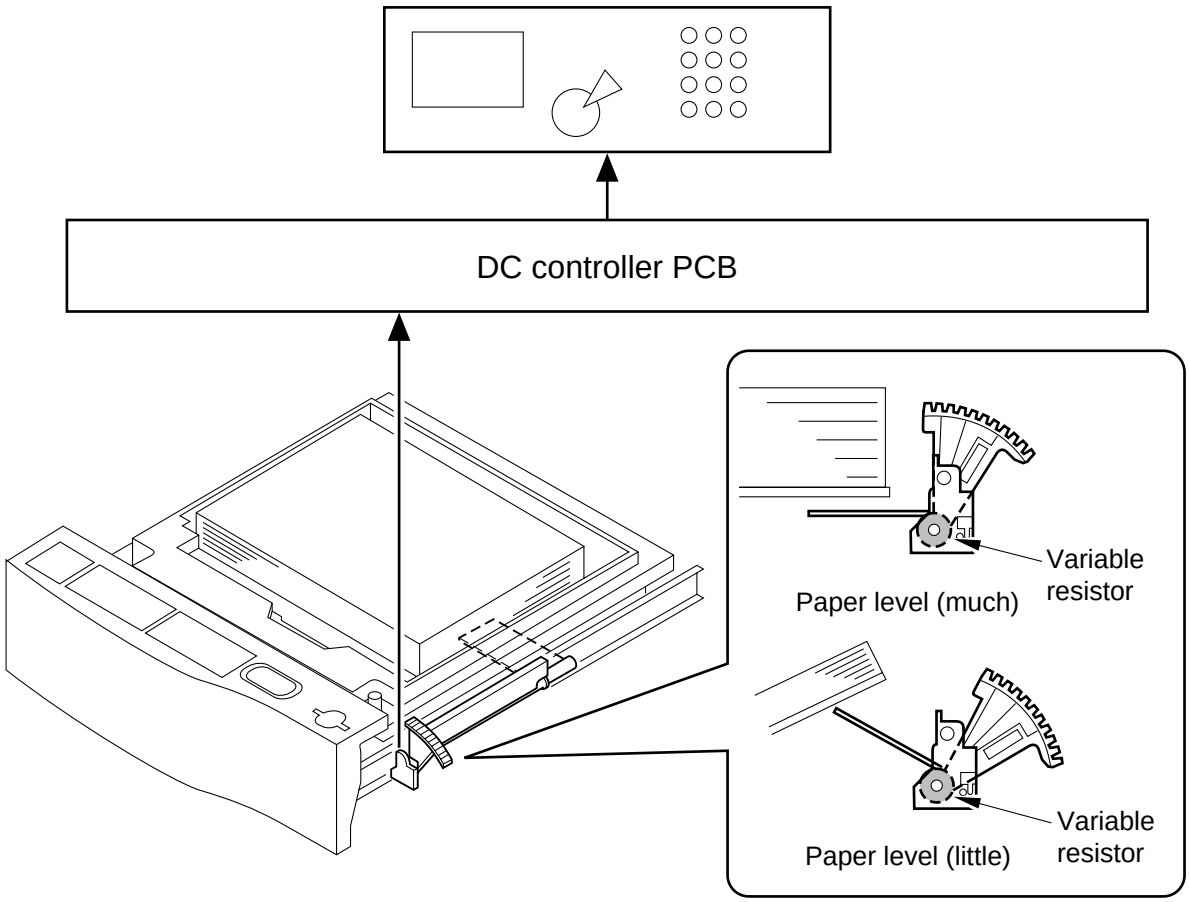


Figure 7-212 Construction of the Mechanism

Related Service Mode

COPIER>ADJUST>CST-ADJ>C3-LVOL	Reading when 50 sheets exit in the cassette 3
COPIER>ADJUST>CST-ADJ>C3-HVOL	Reading when 275 sheets exist in the cassette 3
COPIER>ADJUST>CST-ADJ>C4-LVOL	Reading when 50 sheets exist in the cassette 4
COPIER>ADJUST>CST-ADJ>C4-HVOL	Reading when 275 sheets exist in the cassette 4

Record the above readings on the service label.

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E. Detecting the Cassette Paper Size

1. Cassette Deck Right/Left

The cassette deck right/left is not equipped with a paper detecting mechanism, and the paper size is switched as follows (A4, B5, and LTR):

1. By changing the paper size plate of the cassette.
2. By registering the new paper size in service mode.

Cassette Deck	Service Mode	Settings
Cassette deck right	COPIER>OPTION>BODY>P-SZ-C1	6 : A4, 15 : B5, 18 : LTR
Cassette deck left	COPIER>OPTION>BODY>P-SZ-C2	

2. Cassette 3/4

1. The length of paper is detected by two photointerrupers (each cassette).
2. The width of paper is detected by a slide volume.

🕮 Volume 2>Chapter 5>11>A.3. "Detecting the Paper Size"

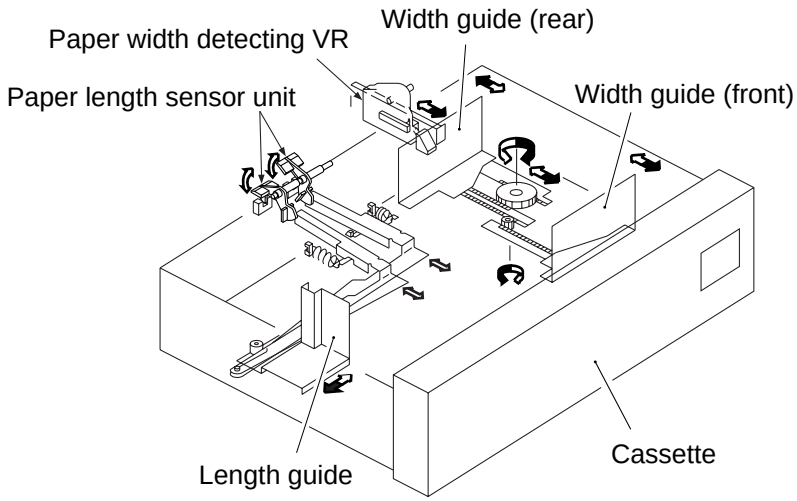


Figure 7-213

	Cassette 3	Cassette 4
Length detection Width detection	SV1 (2 photointerrupers) SV2	SV2 (2 photointerrupers) SVR3

Table 7-205

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3. Markings on the Width Guide Rail

The width guide rail inside the cassette is equipped with paper size positioning holes, which are marked A through M as shown in Table 7-206.

Refer to these markings if the user reports skew movement of paper, thereby deciding whether the paper width is set correctly. (Note that this information is not disclosed to the user.)

Marking	Paper size	Remarks
A	STMT-R	
B	A5-R	
C	B5-R	
D	KLGL-R	
E	GLTR-R	
F	G-LGL	U3
G	A4-R	
H	LGL/LTR-R	
I	FLSC	U2
J	B4/B5	
K	G-LTR	U1
L	279.4×431.8mm	U4
	(11"×17") /LTR	
M	A3/A4	

Table 7-206 Markings and Paper Sizes

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4. Paper Size

The microprocessor on the DC controller PCB determines the size of paper based on the inputs on paper width and paper length.

Table 7-208 shows the paper size groupings selected in service mode.

*Paper size selected at time of shipment.

Length sensor	PS102/ PS104	PS101/ PS103	PS102/ PS104	PS101/ PS103	PS102/ PS104	PS101/ PS103	PS102/ PS104	PS101/ PS103
Width sensor Signal	SZ 2	SZ 1	SZ 2	SZ 1	SZ 2	SZ 1	SZ 2	SZ 1
(slice level) Unit: mm ON/OFF	0	0	0	1	1	0	1	1
288.5	A4		———		A3		———	
273.7	(U4)		———		279.4× 431.8mm (11"×17")		———	
261.8	(U1)		———		———		———	
238.0	B5		———		———		———	
212.9	STMT		LTRR		LGL		(U2)	
206.6	A5		A4R		———		(U3)	
196.6	G-LTRP		———		———			
186.0	K-LGLR		———		———		———	
165.2	B5R		———		———		———	
144.1	A5R		———		———		———	
	STMTR		———		———		———	

Table 7-207 Paper Sizes

Group		Size
U1	*	G-LTR K-LGL
U2	*	FOOLSCAP OFFICIO E-OFFI A-LGL A-OFFI
U3	*	G-LGL FOLIO AUS-FLS
U4	*	LTR A-LTR

Table 7-208 Factory Settings

Related Service Mode

* Factory setting.

COPIER>OPTION>CST>CST-U1	31 : GLTR * , 22 : KLGL
COPIER>OPTION>CST>CST-U2	24 : FLSC * , 26 : OFI, 27 : E-OFI, 33 : A-LGL, 36 : A-OFI
COPIER>OPTION>CST>CST-U3	34 : GLGL * , 35 : FOLI, 25 : A-FLS
COPIER>OPTION>CST>CST-U4	18 : LTR * , 29 : A-LTR

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Related Service Mode

COPIER>ADJUST>CST-ADJ>C3-STMTR	Use it to adjust the paper width basic value for STMTR in the left deck.
COPIER>ADJUST>CST-ADJ>C3-A4R	Use it to adjust the paper width basic value for A4R in the left deck.
COPIER>ADJUST>CST-ADJ>C4-STMTR	Use it to adjust the paper width basic value for STMTR in the right deck.
COPIER>ADJUST>CST-ADJ>C4-A4R	Use it to adjust the paper width basic value for A4R in the right deck.

COPIER>OPTION>BODY>C1-DWSW	Use it to switch the fixing assembly temperature control mechanism for deck right pickup.
COPIER>OPTION>BODY>C2-DWSW	Use it to switch the fixing assembly temperature control mechanism for deck left pickup.
COPIER>OPTION>BODY>C3-DWSW	Use it to switch the fixing assembly temperature control mechanism for cassette 3 pickup.
COPIER>OPTION>BODY>C4-DWSW	Use it to switch the fixing assembly temperature control mechanism for cassette 4 pickup.

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• Papers Supported by the Copier

Paper	Notation	Size (vertical×horizontal; mm)
A3	A3	(297±1)×(420±1)
A4R	A4R	(210±1)×(297±1)
A4	A4	(297±1)×(210±1)
A5	A5	(210±1)×(148.5±1)
A5R	A5R	(148.5±1)×(210±1)
B4	B4	(257±1)×(364±1)
B5R	B5R	(182±1)×(257±1)
B5	B5	(257±1)×(182±1)
11×17	11×17	(279±1)×(432±1)
LTRR	LTRR	(216±1)×(279±1)
LTR	LTR	(279±1)×(216±1)
STMT	STMT	(216±1)×(139.5±1)
STMR	STMTR	(139.5±1)×(216±1)
LEGAL	LGL	(216±1)×(356±1)
Korean Government	K-LGL	(265±1)×(190±1)
Korean Government R	K-LGLR	(190±1)×(265±1)
FOOLSCAP	FLSC	(216±1)×(330±1)
Australian FOOLSCAP	A-FLS	(206±1)×(337±1)
OFICIO	OFI	(216±1)×(317±1)
Ecuadorian OFFICIO	E-OFI	(220±1)×(320±1)
Bolivian OFFICIO	B-OFI	(216±1)×(355±1)
Argentine LTR	A-LTR	(280±1)×(220±1)
Argentine LTRR	A-LTRR	(220±1)×(280±1)
Government LTR	G-LTR	(267±1)×(203±1)
Government LTRR	G-LTRR	(203±1)×(267±1)
Argentine LGL	A-LGL	(220±1)×(340±1)
Government LGL	G-LGL	(203±1)×(330±1)
FOLIO	FOLI	(210±1)×(330±1)
Argentine OFFICIO	A-OFI	(220±1)×(340±1)

Table 7-209 Paper Sizes

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F. Manual Feed Tray Pickup Assembly

1. Pickup Operation

a. Control System

🕮 Volume 2>Chapter 5>B.b. "Multifeeder Manual Feeding"

Pickup drive : pickup motor (M2)
Pickup roller contro : manual feed tray pickup clutch (CL7)
manual feed tray pickup solenoid (SL6)
Paper feed detection : manual feed sensor (PS35)

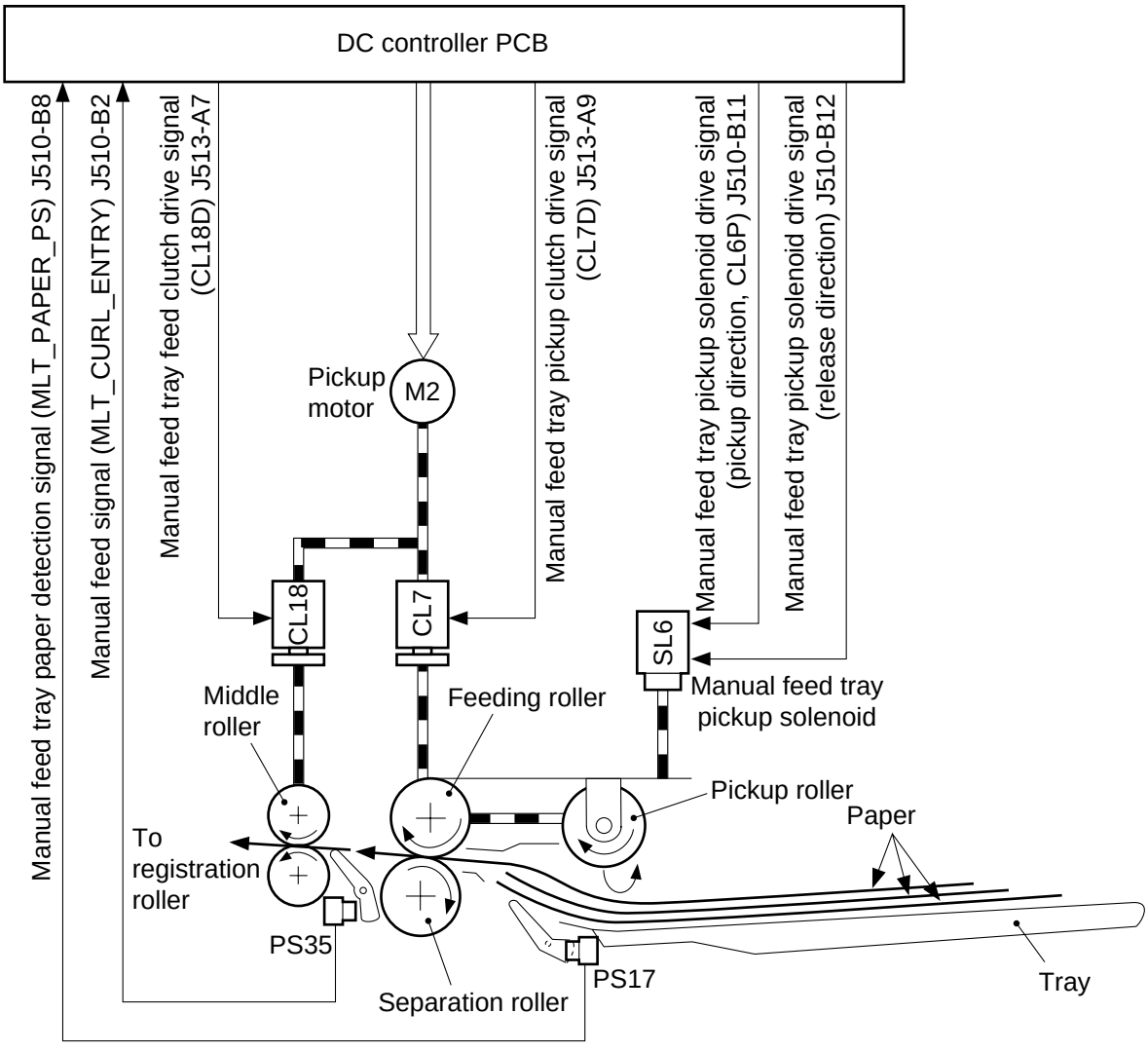


Figure 7-214

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2. Detecting the Paper Size

📖 Volume 2>Chapter 5>B.3. "Detecting the Paper Size"

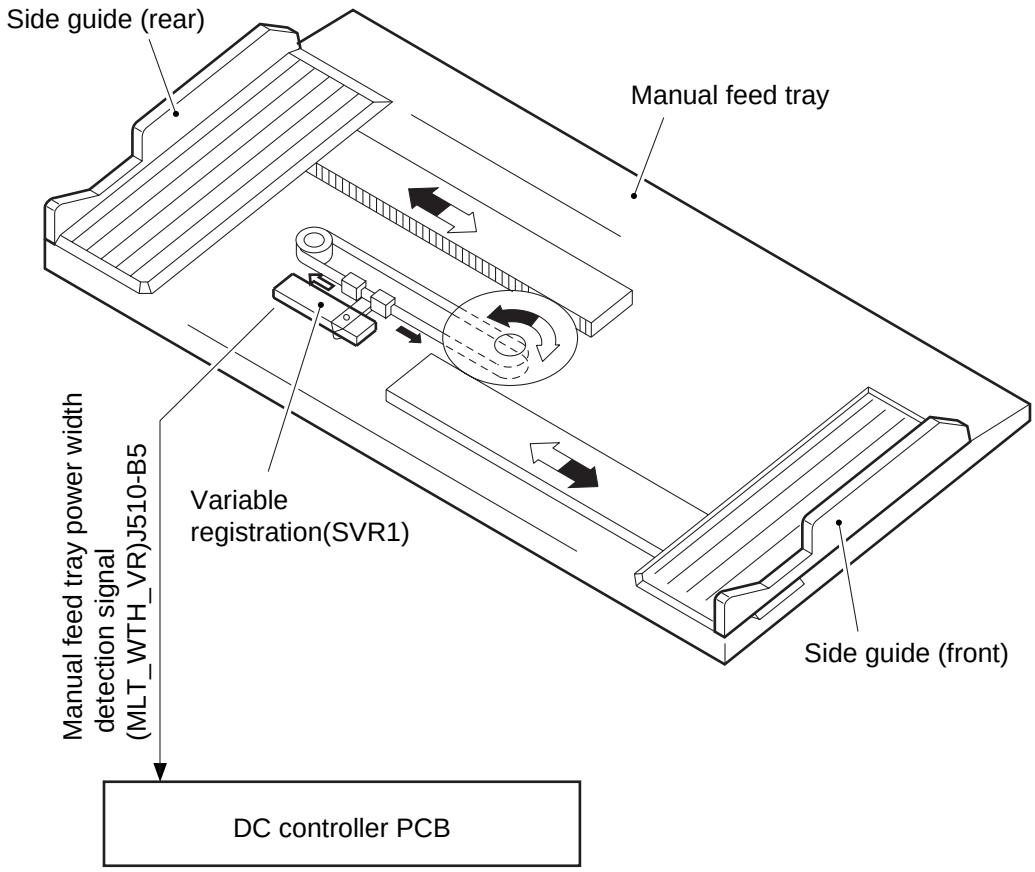


Figure 7-215

Related Service Mode

COPIER>ADJUST>CST-ADJ>MF-A4R	Use it to change the paper width basic value for A4R on the manual feed tray.
COPIER>ADJUST>CST-ADJ>MF-A6R	Use it to adjust the paper width basic value for A6R on the manual feed tray.
COPIER>ADJUST>CST-ADJ>MF-A4	Use it to adjust the paper width basic value for A4 on the manual feed tray.

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III . CONTROLLING THE REGISTRATION CLUTCH

A. Outline

🕮 Volume 2>Chapter 6>III>A. "Controlling the Registration Roller"

Registration clutch	CL2
Registration clutch drive signal	CL2D
Registration brake clutch	CL3
Registration brake clutch drive signal	CL3D
Shift clutch activation timing	service mode

B. Control System

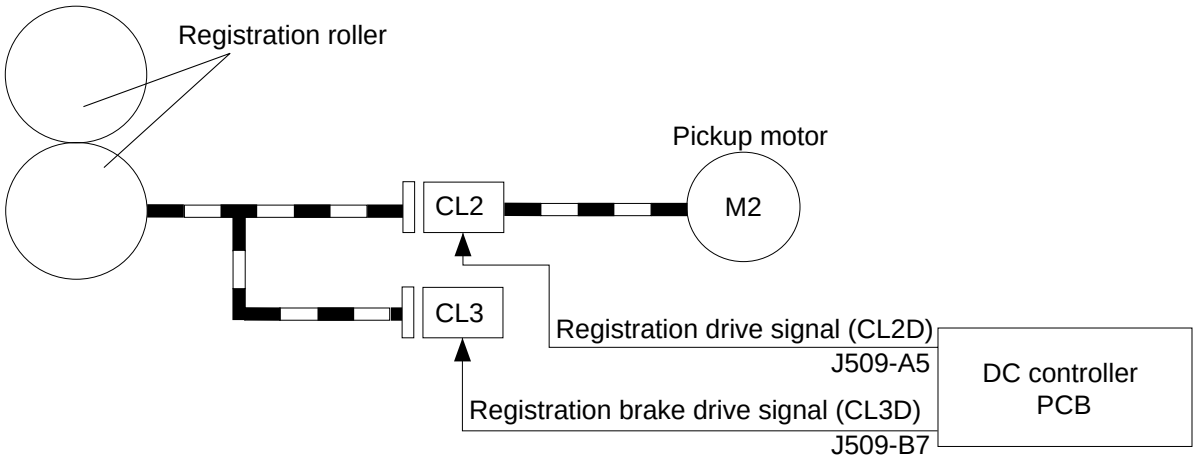
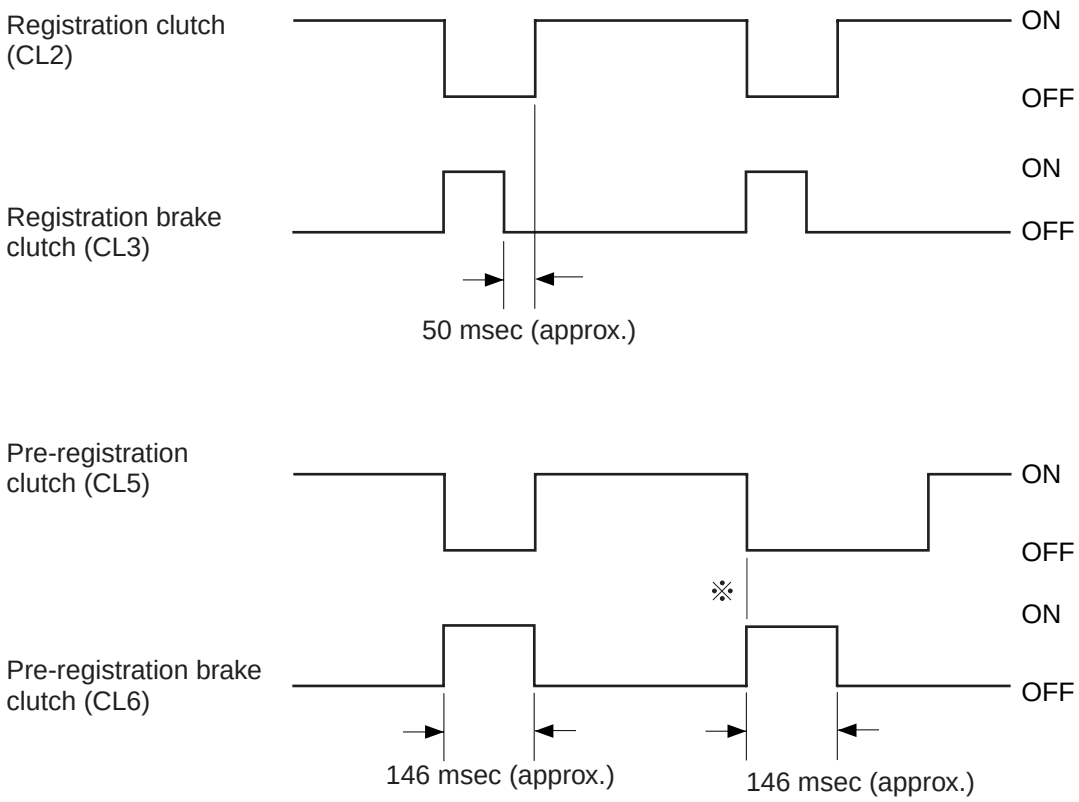


Figure 7-301

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C. Sequence of Operations (registration brake)



Note: If paper stops for a long time before the registration roller,

- ADF original processing time
- Finisher delivery processing time

Figure 7-302

As soon as the registration drive signal turns off, the registration brake clutch is kept on depending on the way paper is being fed for a specific period of time to prevent idle rotation otherwise caused by inertia.

Related Service Mode

COPIER>ADJUST>FEED-ADJ>REGIST	Use it to adjust the image write start position in main scanning direction during re-pickup

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IV . MAKING DOUBLE-SIDED COPIES

A. Control System

1. Copying on the First Side

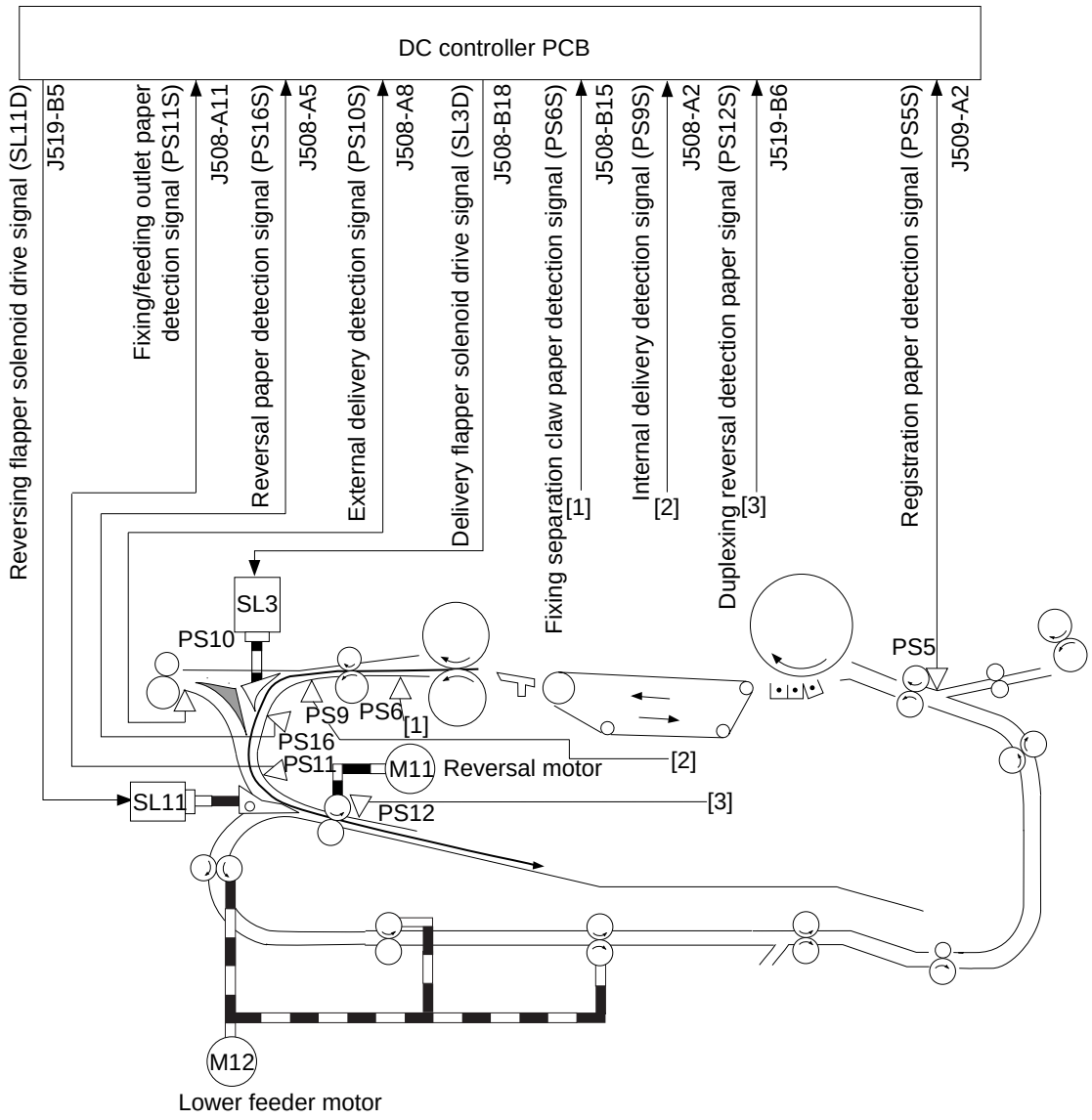


Figure 7-401

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2. Copying on the Second Side

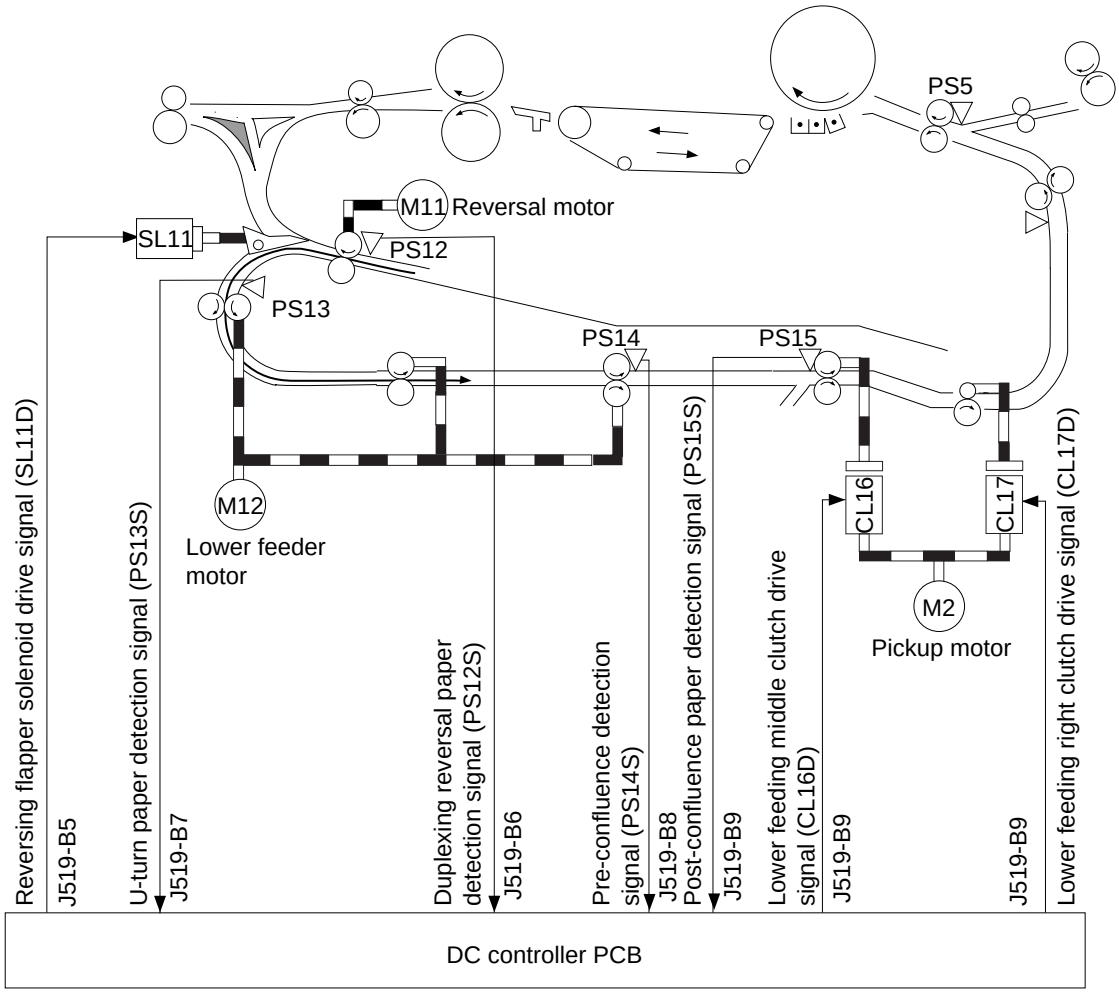


Figure 7-402

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B. Sequence of Operations

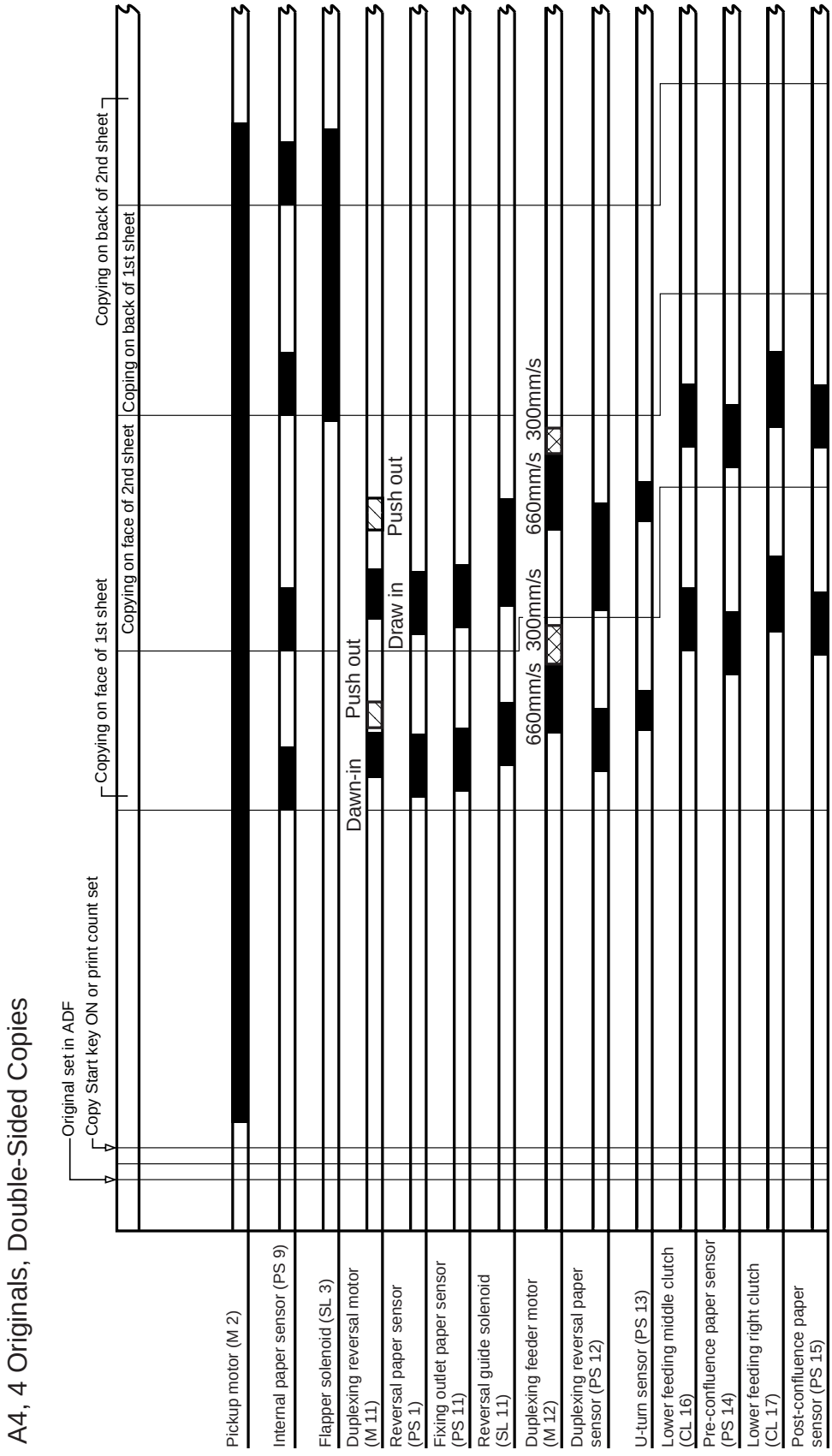

A4, 4 Originals, Double-Sided Copies
Original set in ADF
Copy Start key ON or print count set
Copying on face of 1st sheet
Copying on face of 2nd sheet
Coping on back of 1st sheet
Copying on back of 2nd sheet
Pickup motor (M 2)
Internal paper sensor (PS 9)
Flapper solenoid (SL 3)
Duplexing reversal motor (M 11)
Dawn-in
Push out
Reversal paper sensor (PS 1)
Draw in
Push out
Fixing outlet paper sensor (PS 11)
Reversal guide solenoid (SL 11)
Duplexing feeder motor (M 12)
660mm/s
300mm/s
660mm/s
300mm/s
Duplexing reversal paper sensor (PS 12)
U-turn sensor (PS 13)
Lower feeding middle clutch (CL 16)
Pre-confluence paper sensor (PS 14)
Lower feeding right clutch (CL 17)
Post-confluence paper sensor (PS 15)

Figure 7-403

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C. Controlling the Reversal Motor (M11)

1. Outline

Table 7-401 shows the function of the reversal motor control circuit, and Figure 7-404 is a block diagram of the circuit.

Item	Description
Power supply	Supplies 24 V from the no-stacking feeder driver PCB.
Drive signal	Signal (DUPI_OFF) from the DC controller PCB.
Operating/drive assembly	See Figure 7-401.
Control	ON/OFF control Direction control
Error detection	No error code; however, if a fault in the drive of the motor, a jam will occur.

Table 7-401

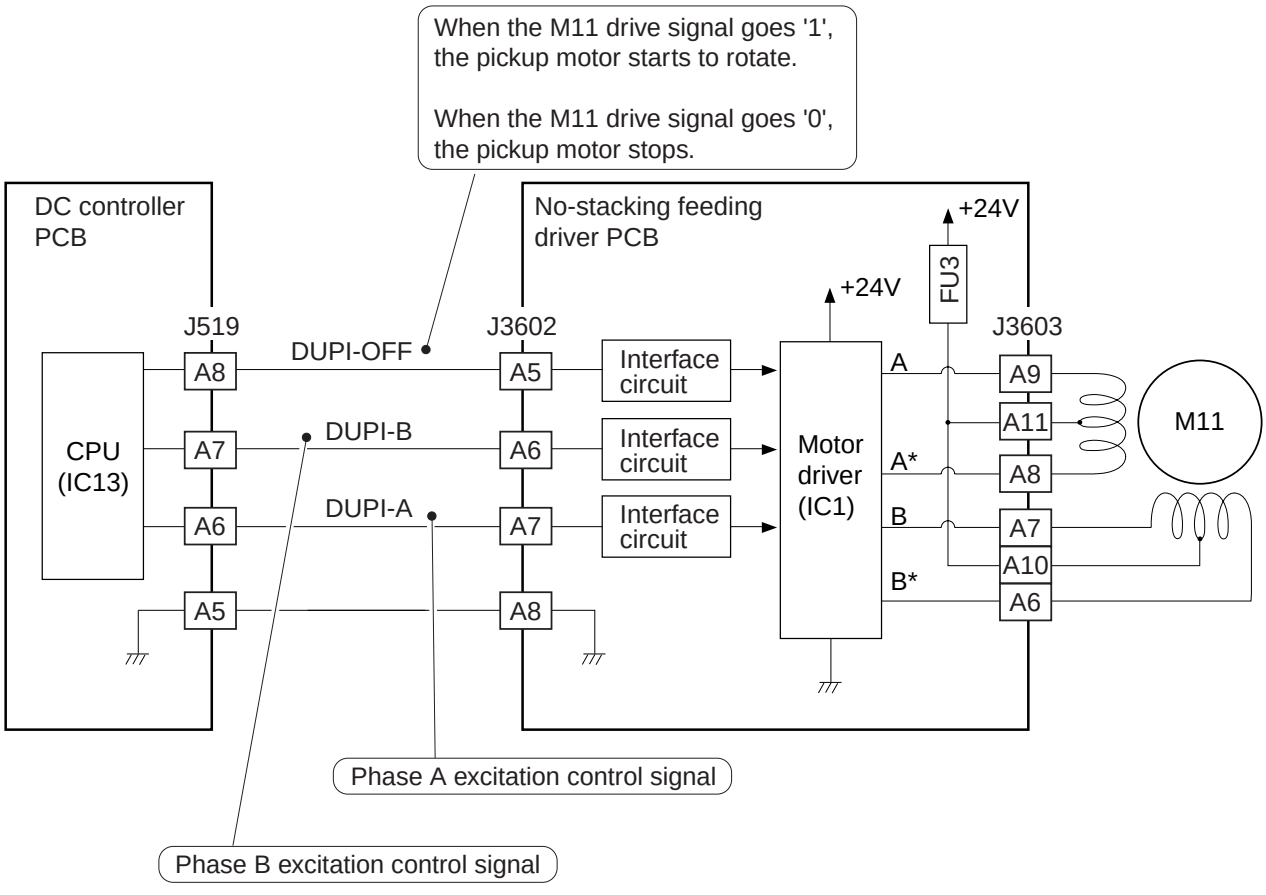


Figure 7-404

D. Controlling the Duplexing Feeder Motor (M12)

1. Outline

Table 7-402 shows the functions of the duplexing feeder motor control circuit, and Figure 7-405 is a block diagram of the circuit.

Item	Description
Power supply	24 V is supplied by the no-stacking feeding driver PCB.
Drive signal	Signal (DUPF_OFF) from the DC controller PCB.
Operating/drive assembly	See Figure 7-401.
Control	ON/OFF control Rotation control
Error detection	No error code; however, a fault in the motor drive will cause a jam.

Table 7-402

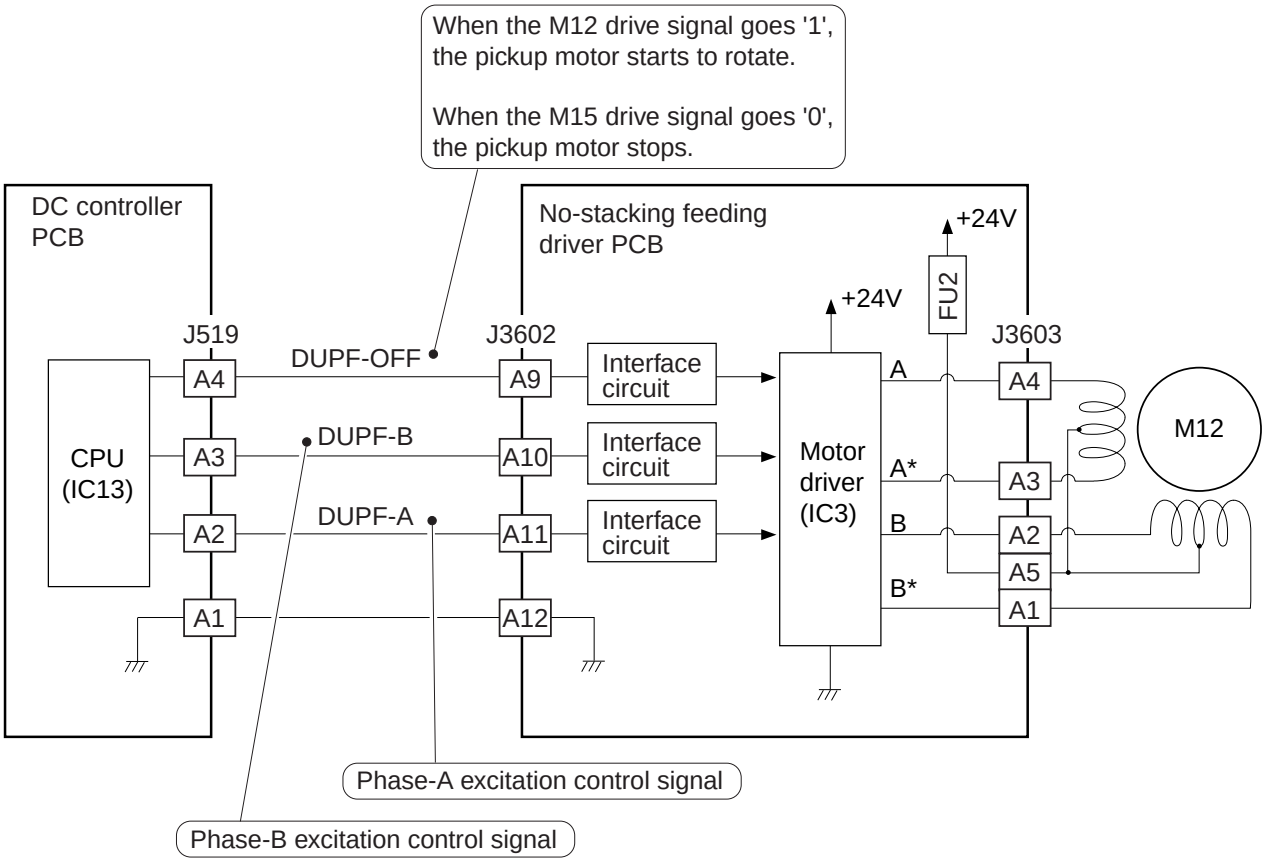


Figure 7-405

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E. No-Stacking Operation

1. Outline

In no-stacking operation, paper after fixing is moved to the holding tray assembly by the delivery flapper and the reversing flapper and, then, is moved to the lower feeding assembly.

The copier re-orders image pages in its memory for printing, eliminating the need for printing in the order of the originals; as a result, its paper feeding operation need not be held at rest too long and, consequently, double-sided copies may be made faster. As many as two sheets of paper may exist simultaneously between the registration sensor and the lower feeding outlet sensor.

Related Service Mode

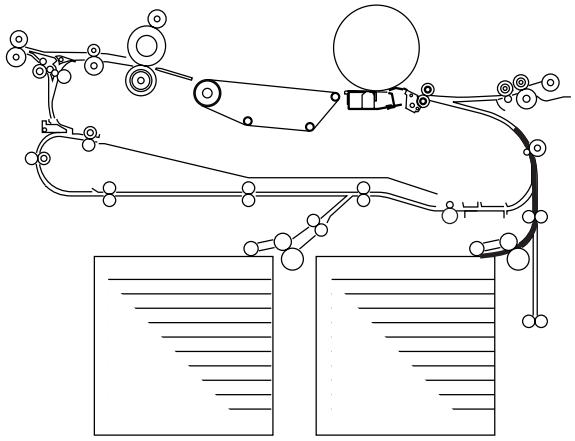
COPIER>ADJUST>FEED-ADJ>ADJ-REFE	Use it to adjust the image write start position in main scanning direction for re-pickup. (-100 to 100 mm)

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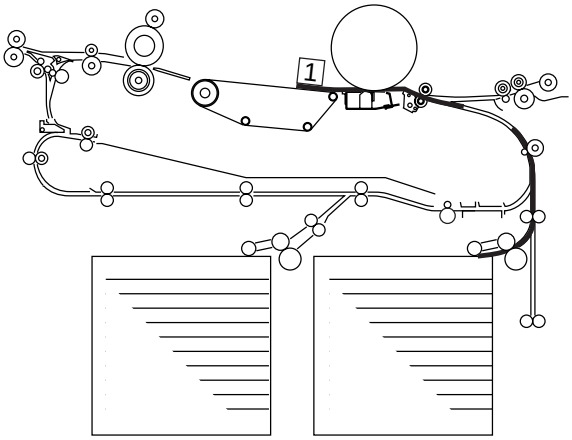
2. Outline of Operations

For instance, no-stacking operation takes place as follows when making one set of double-sided copies of 10 originals.

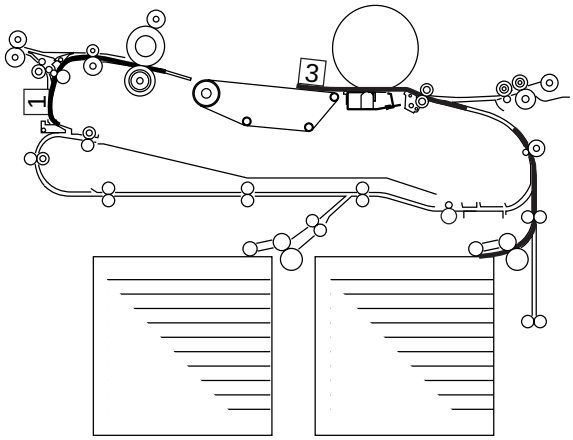
1. The 1st sheet is picked up from the deck right.



2. The 1st side is printed on the 1st sheet. The 2nd sheet is picked up.



3. The 3rd side is printed on the 2nd sheet. The 1st sheet is moved to the holding tray assembly. The 3rd sheet is picked up.



4. The 1st sheet is moved to the reversing assembly.

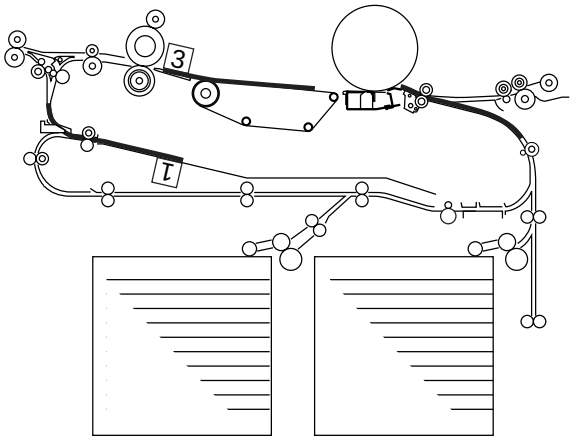
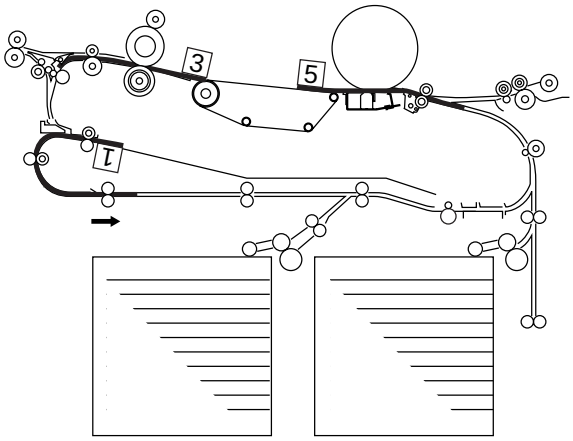


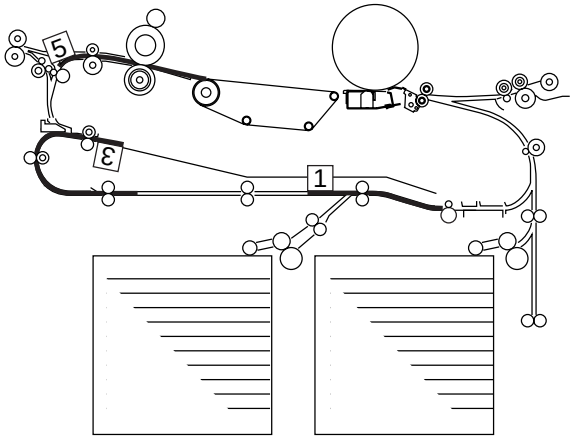
Figure 7-406-1

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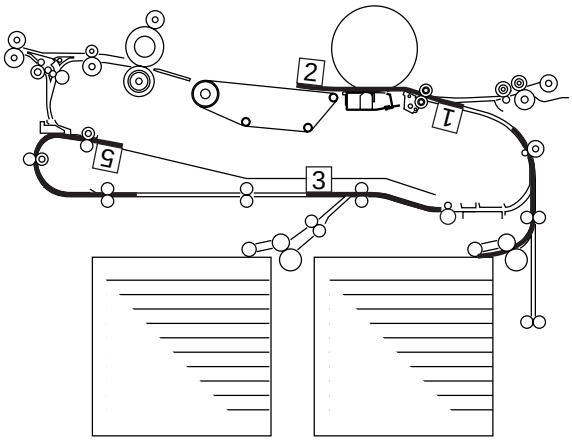
5. The 1st sheet is moved to the lower feeding assembly.
   The 5th side is printed on the 3rd sheet.



6. The 1st sheet is re-picked up from the lower feeding assembly.



7. The 2nd side is printed on the 1st sheet.
   The 2nd sheet is kept in wait, and the 4th sheet is picked up.



8. The 7th side is printed on the 4th sheet, and the 1st sheet is discharged.

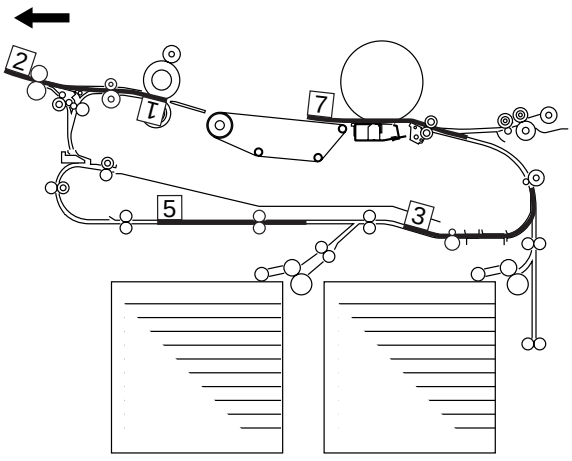
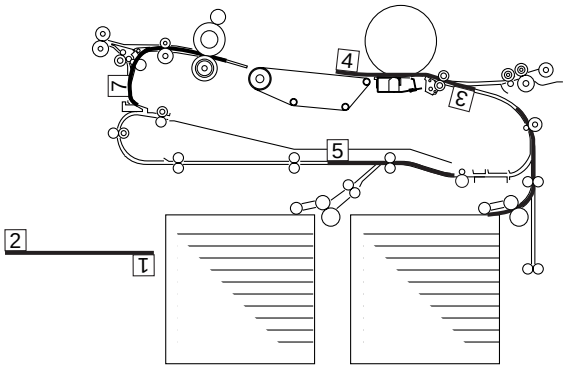


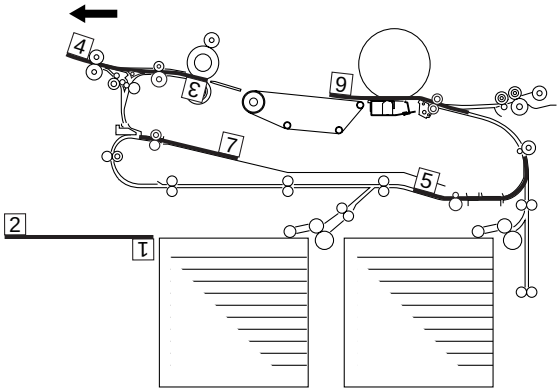
Figure 7-406-2

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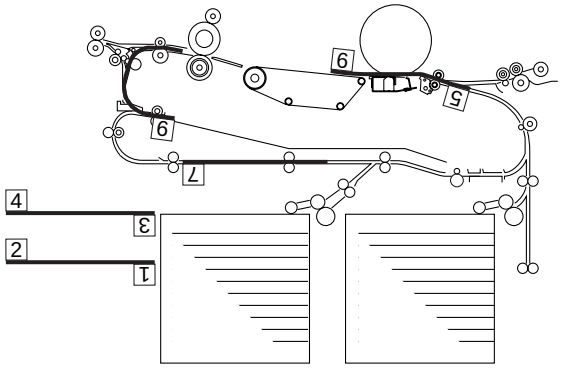
9. The 4th side is printed on the 2nd sheet, and the 3rd sheet is kept in wait in the lower feeding assembly.
   The 5th sheet is picked up.



10. The 2nd sheet is discharged.
    The 9th side is printed on the 5th sheet.



11. The 6th side is printed on the 3rd sheet.



12. The 3rd sheet is discharged.

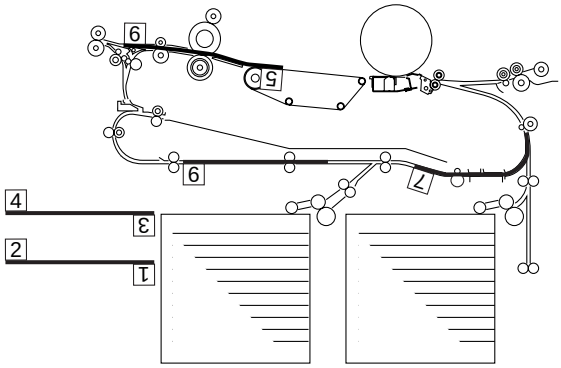
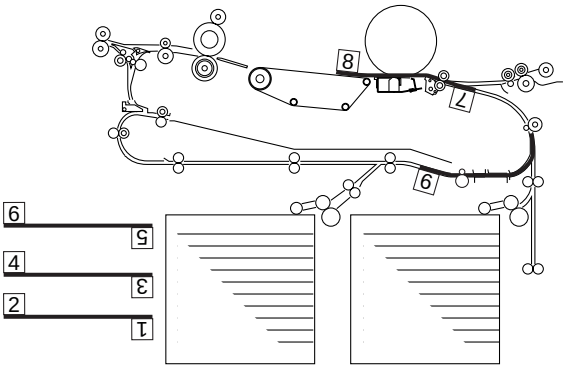


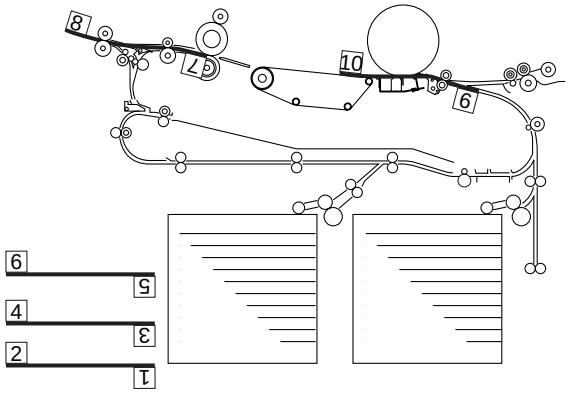
Figure 7-406-3

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13. The 8th side is printed on the 4th sheet.



14. The 4th sheet is discharged, and the 10th side is printed on the 5th sheet.



15. The 5th sheet is discharged.

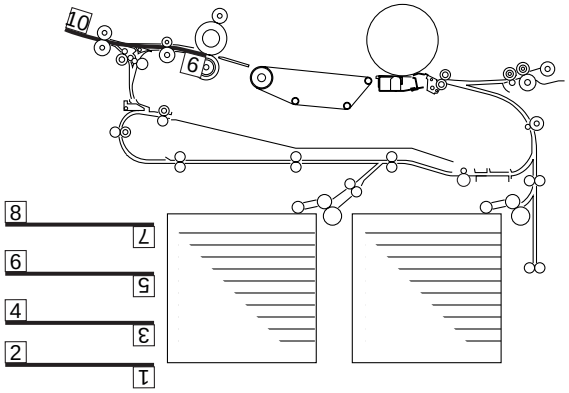


Figure 7-406-4

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F. Detecting the Horizontal Registration Position

1. Outline

Paper position detection	By the horizontal registration sensor (PS18)
Detection start timing	By the post-confluence sensor (PS15)
Drive	By the horizontal registration motor (M15)
Position measurement	By controlling the horizontal registration motor pulses (1 pulse = about 0.16 mm)
Related service mode	COPIER>ADJUST>FEED-ADJ>ADJ-REFE
Related error code	E051: The home position cannot be detected within a specific period of time.

Table 7-403 Functions

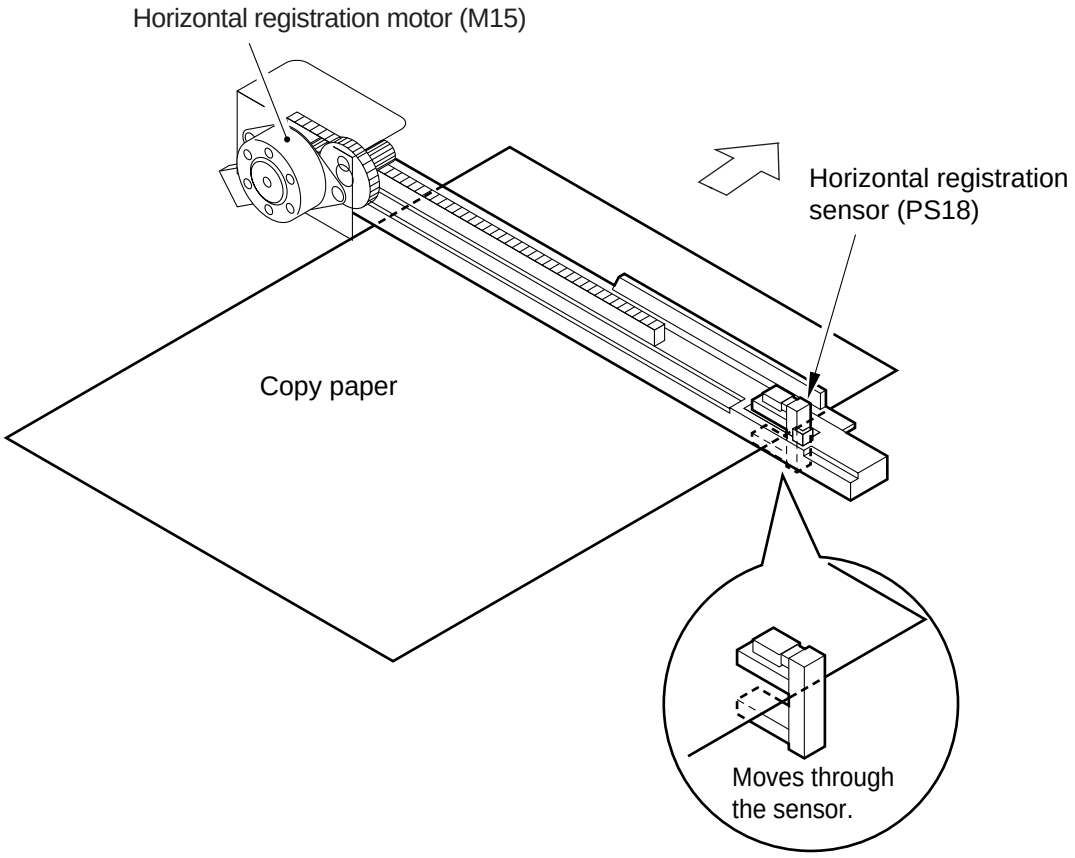


Figure 7-407

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2. Operations

The horizontal registration sensor moves to the start position (A4 detection position) when the main power switch is turned on or the front cover is closed, and moves to a detection position to suit the size of paper expected in the lower feeding assembly. Its position of detection is "paper width + 2 mm."

The paper detection mechanism starts when paper moved to the lower feeding assembly has moved past the confluence sensor (PI 15) and has been moved over a specific distance (about 10 mm past the horizontal registration sensor).

The position of paper is detected with reference to the start position and by finding out the difference between the start position and the actual paper position from the number of drive pulses (1 pulse = about 0.16 mm) of the motor.

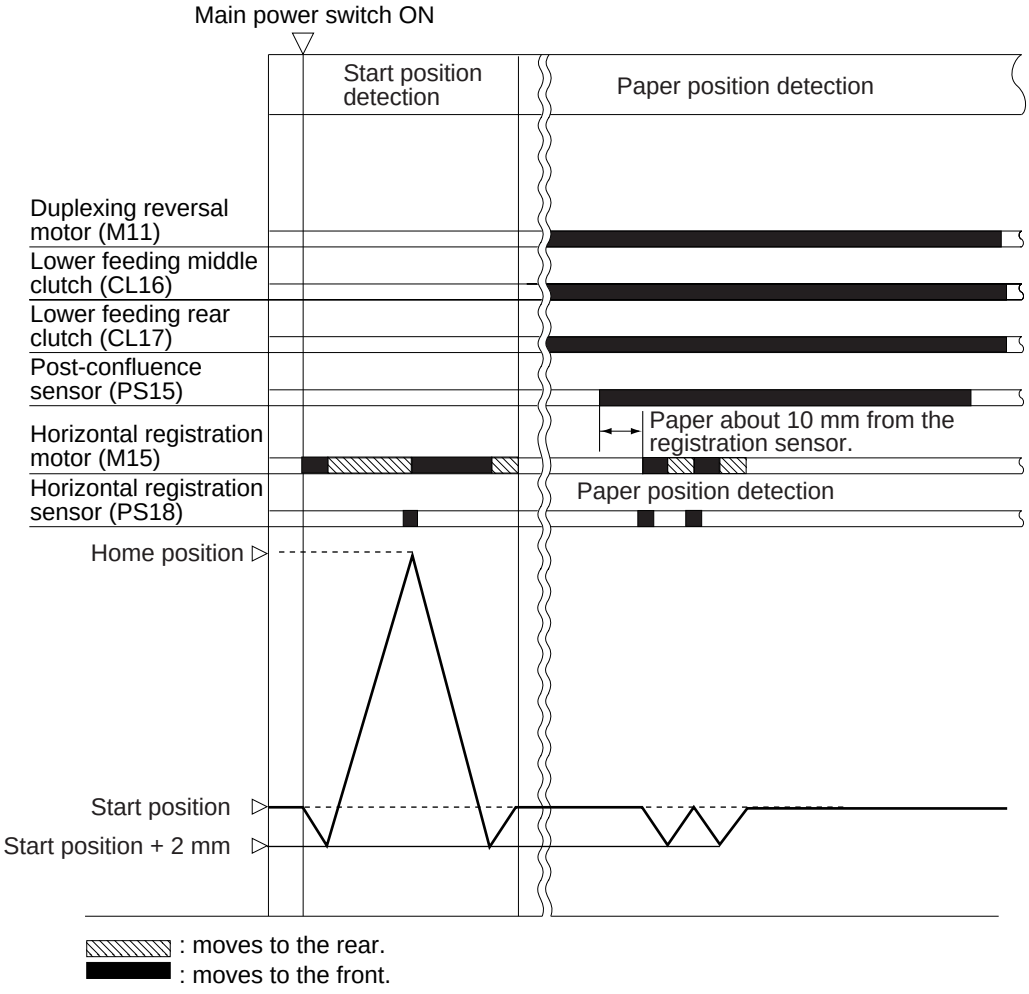

Main power switch ON
Start position detection
Paper position detection
Duplexing reversal motor (M11)
Lower feeding middle clutch (CL16)
Lower feeding rear clutch (CL17)
Post-confluence sensor (PS15)
Horizontal registration motor (M15)
Horizontal registration sensor (PS18)
Paper about 10 mm from the registration sensor.
Paper position detection
Home position
Start position
Start position + 2 mm
: moves to the rear.
: moves to the front.

Figure 7-408 Horizontal Registration Detection

3. Controlling the Horizontal Registration Motor (M15)

Table 7-404 shows the functions of the reversal motor control circuit, and the Figure 7-409 is a block diagram of the circuit.

Item	Description
Power supply	24 V is supplied by the no-stacking feeding driver PCB.
Drive signal	Signal (SREGI_HOLD) from the DC controller PCB.
Operating/drive assembly	See Figure 7-407.
Control	ON/OFF control Rotation control Stop position retention
Error detection	Error code "E051"

Table 7-404

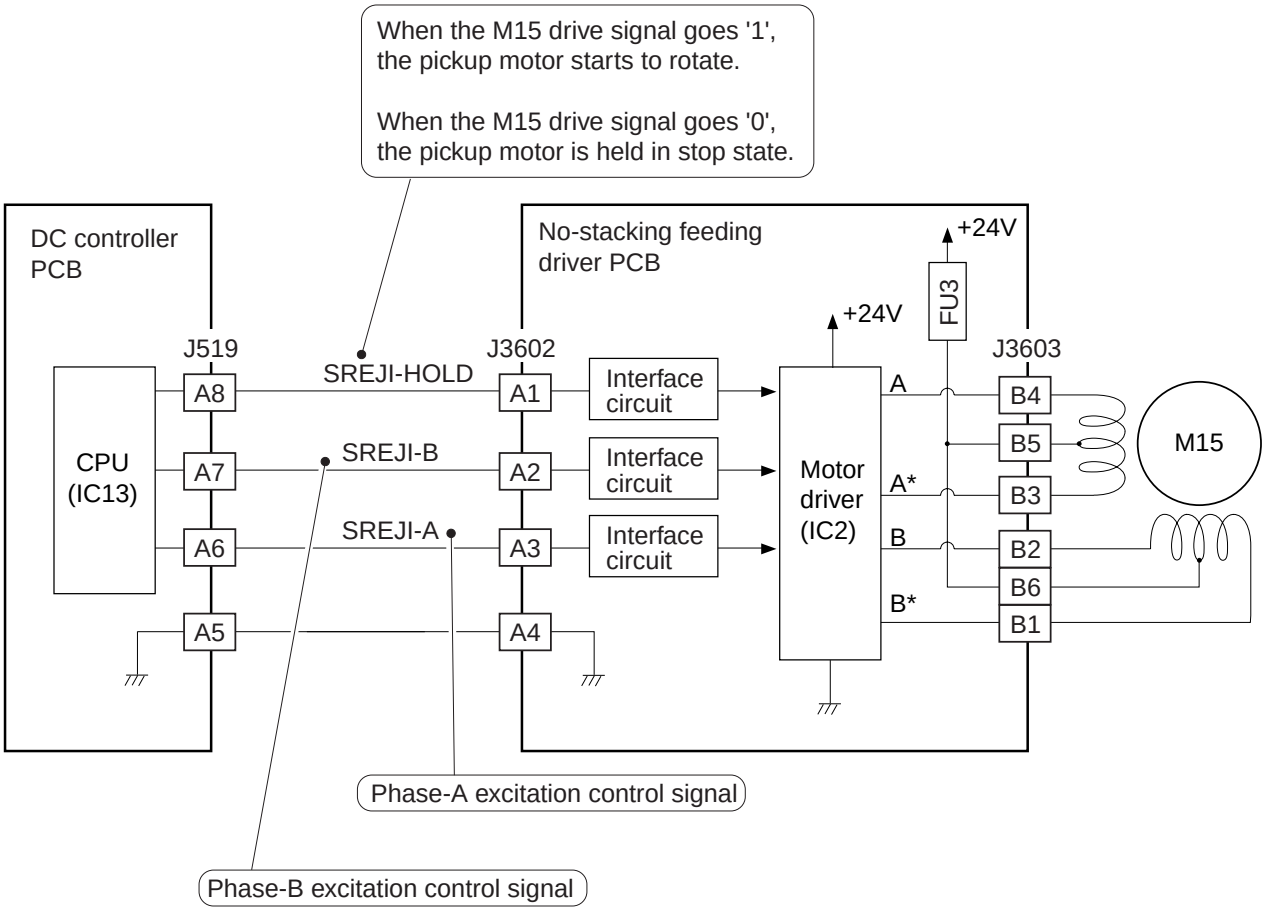


Figure 7-409

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V . CONTROLLING THE DELIVERY/ASSEMBLY

A. Reversal Delivery

The copier discharges paper either in face-up delivery or in face-down delivery mode.

Delivery	Copying operation
Face-up	• Making multiple copies of a single original. • Making copies on transparencies (However, the images will be mirror images.)
Face-down	• Other than above

Table 7-501

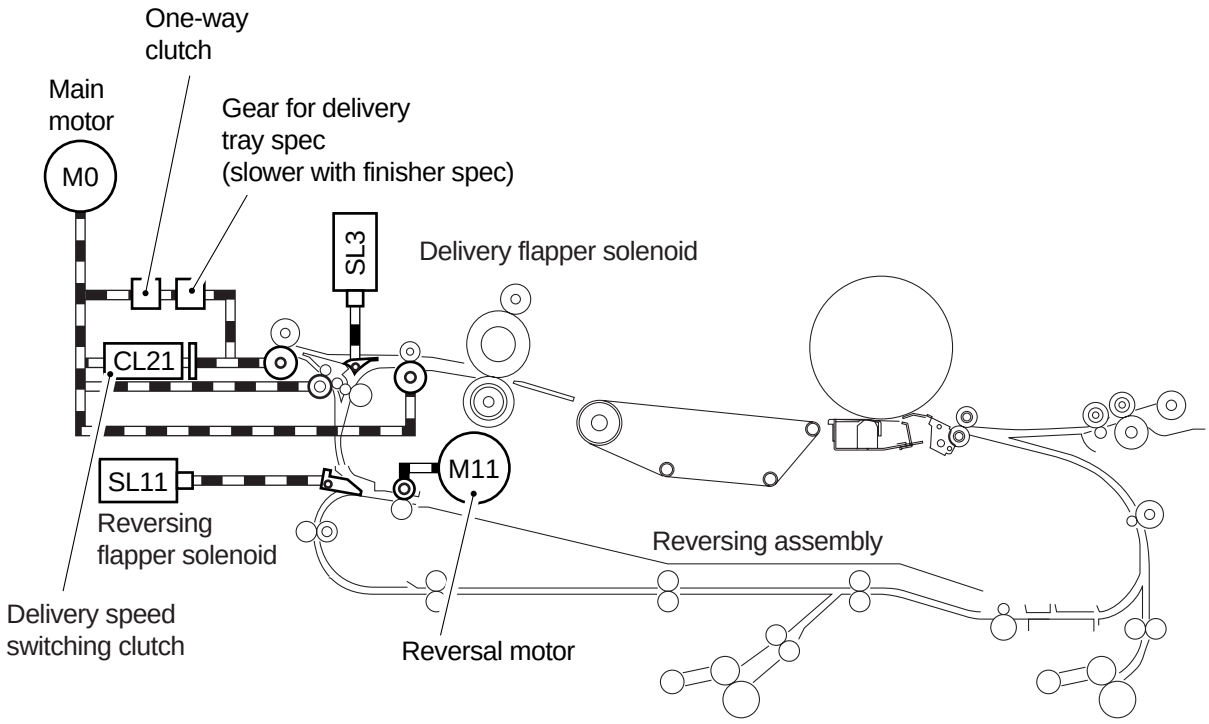


Figure 7-501

Parts (notation)	Description
Main motor (M0)	Drives the feeding roller.
Delivery flapper solenoid (SL3)	Turns on in face-up mode to lead paper to the delivery assembly.
Delivery speed switching clutch (CL21)	Turns on in reversal delivery mode to speed up the rotation of the external delivery roller.
Reversing flapper solenoid (SL11)	Turns off in reversal delivery mode to lead paper to the reversing assembly.
Reversal motor (M11)	Moves paper to the reversing assembly.

Table 7-502

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VI . CONTROLLING THE CASSETTE HEATER

The drive of the cassette heater is synchronized with either the outlet power supply or the control panel power switch, selected by the heater switch (SW3).

While the copier is operating (i.e., both power switch and control panel power switch are on), the cassette heater ON signal (CASSETTE_HEATER_ON) controls the drive of the cassette heater at all times.

	Main power switch OFF	Main power switch ON Control panel power switch OFF	Main power switch ON Control panel power switch ON
Sync with outlet power supply (ON)	Drives the cassette heater.	Drives the cassette heater.	Drives the cassette heater in response to the cassette heater ON signal.
Sync with control panel paper supply switch (OFF)	Stops the cassette heater.	Stops the cassette heater.	

Table 7-601

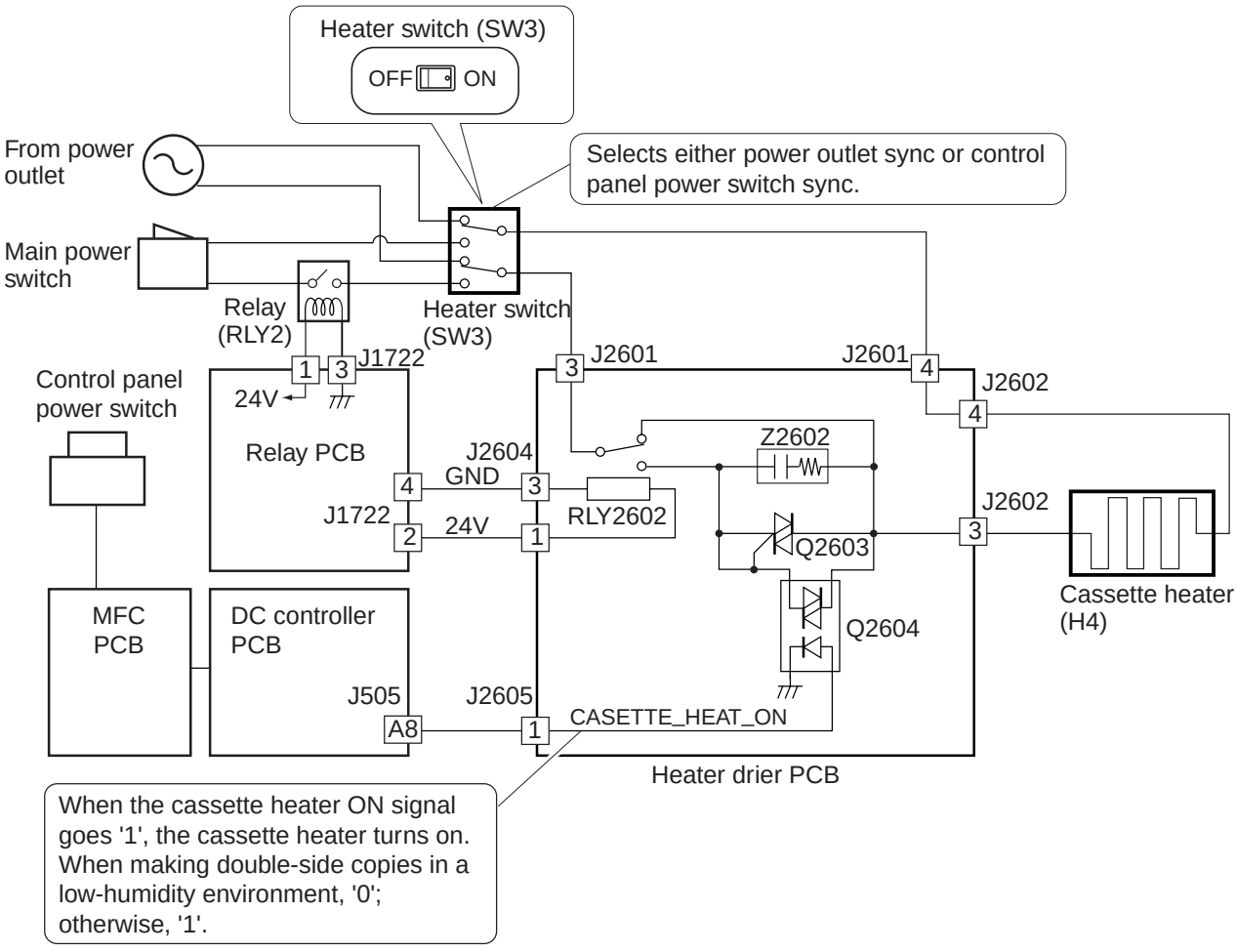


Figure 7-601 Block Diagram of the Cassette Heater Control Mechanisms

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VII . DETECTING JAMS

A. Outline

1. Arrangement of Jam Sensors

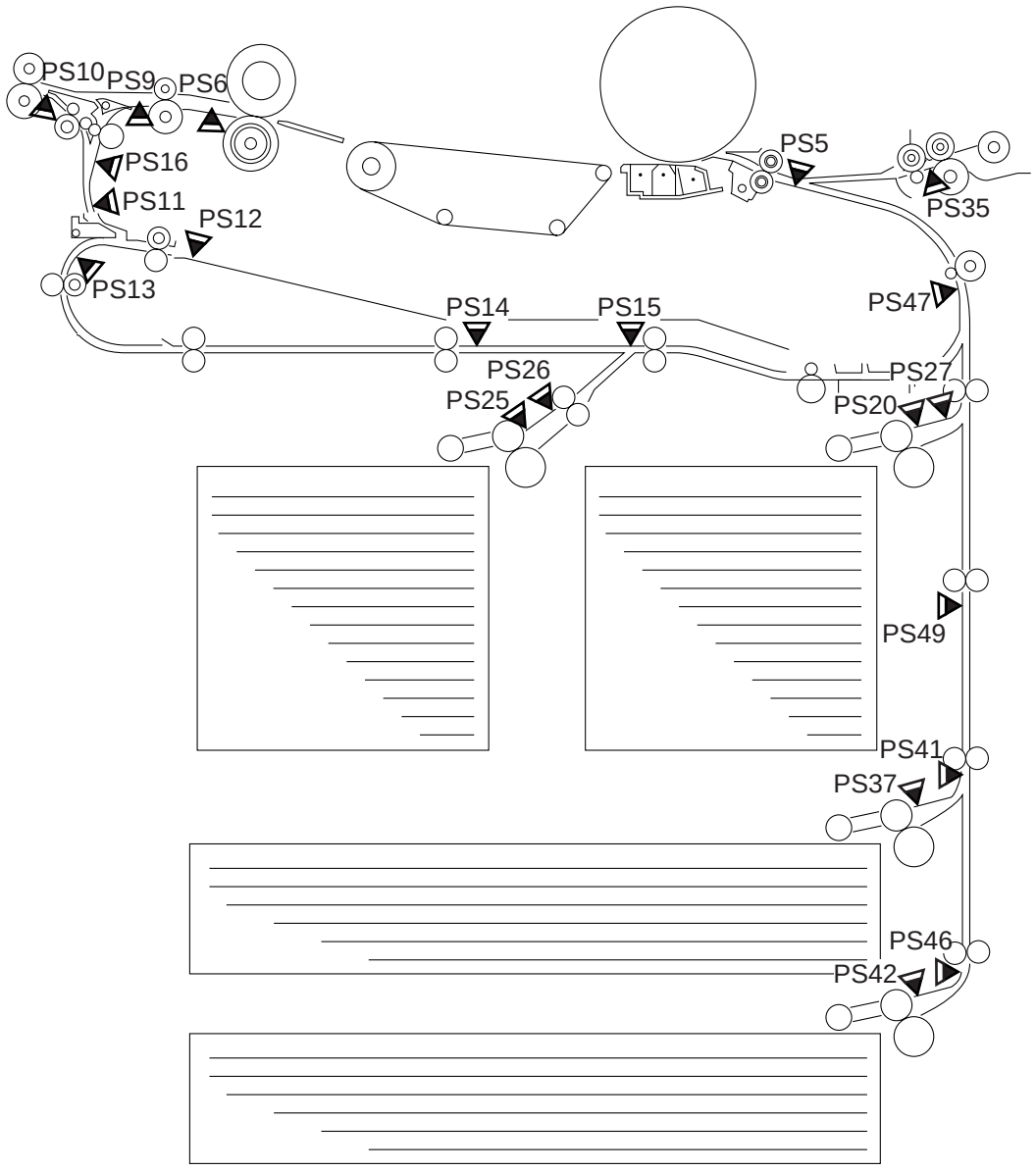


Figure 7-701 Arrangement of Sensors

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2. Types of Jams

Sensor		Delay jam	Stationary jam	Stationary jam from power-on
Right deck pickup sensor	PS20	Present	Absent	Absent
Left deck pickup sensor	PS25	Present	Absent	Absent
Cassette 3 pickup sensor	PS37	Present	Absent	Absent
Cassette 4 pickup sensor	PS42	Present	Absent	Absent
Right deck feed sensor	PS27	Present	Absent	Present
Left deck feed sensor	PS26	Present	Absent	Present
Manual feed sensor	PS35	Present	Absent	Present
Vertical path 1 sensor	PS47	Present	Present	Present
Vertical path 2 sensor	PS49	Present	Present	Present
Vertical path 3 sensor	PS41	Present	Absent	Present
Vertical path 4 sensor	PS46	Present	Absent	Present
Registration roll sensor	PS5	Present	Present	Present
Claw jam sensor	PS6	Absent	Present	Present
Internal delivery sensor	PS9	Present	Present	Present
External delivery sensor	PS10	Present	Present	Present
Reversal sensor	PS16	Present	Present	Present
Fixing feeding outlet sensor	PS11	Absent	Absent	Present
Duplexing reversal sensor	PS12	Present	Present	Present
U-turn sensor	PS13	Present	Present	Present
Pre-confluence sensor	PS14	Present	Present	Present
Post-confluence sensor	PS15	Present	Present	Present

Table 7-701 Types of Jams

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B. Sequence of Operations (jam detection)

1. Delay Jams

a. Cassette Pickup (Right deck, Left deck, cassette 3, 4)

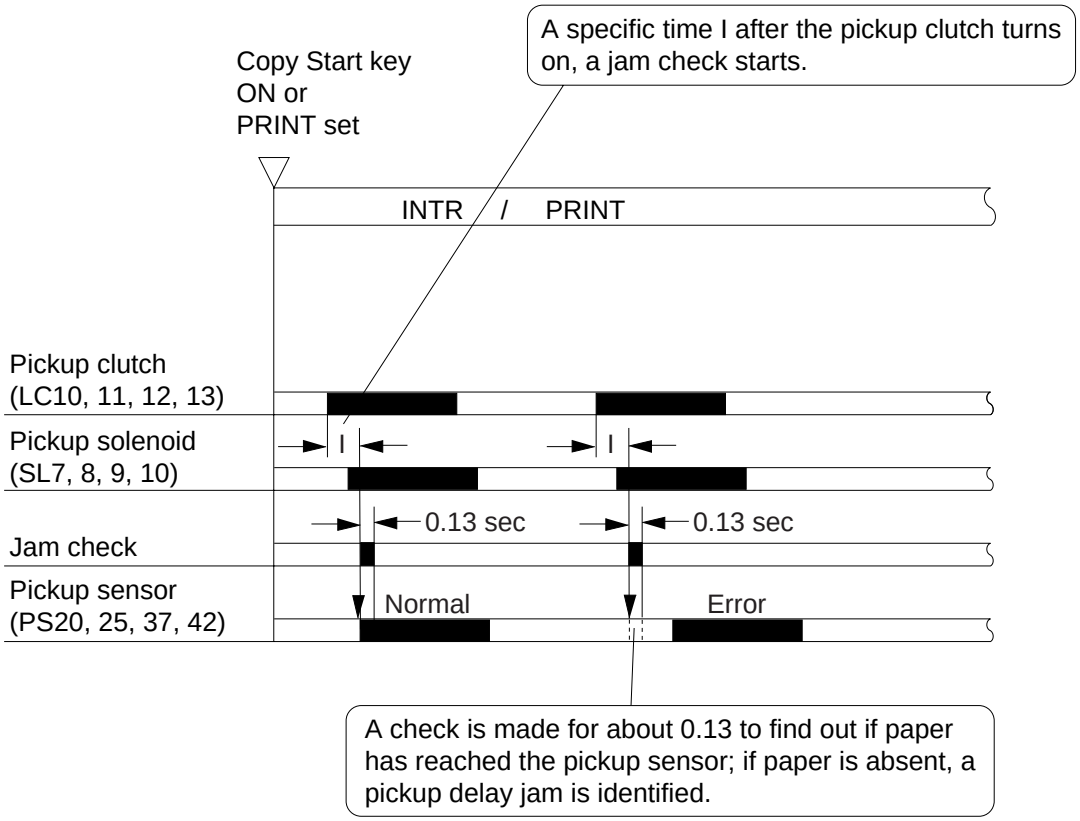

A specific time I after the pickup clutch turns on, a jam check starts.
Copy Start key ON or PRINT set
INTR / PRINT
Pickup clutch (LC10, 11, 12, 13)
Pickup solenoid (SL7, 8, 9, 10)
I
I
0.13 sec
0.13 sec
Jam check
Pickup sensor (PS20, 25, 37, 42)
Normal
Error
A check is made for about 0.13 to find out if paper has reached the pickup sensor; if paper is absent, a pickup delay jam is identified.

Figure 7-702 Detecting a Delay Jam

Source of paper	Time period (I)
Right deck	0.12 sec (approx.)
Left deck	0.15 sec (approx.)
Cassette 3	0.15 sec (approx.)
Cassette 4	0.15 sec (approx.)
Manual feed tray	0.18 sec (approx.)

Table 7-702 Time Period I and Source of Paper

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b. Other Delay Jams

Basically, the same principles are used to detect delay jams other than pickup sensor delay jams.

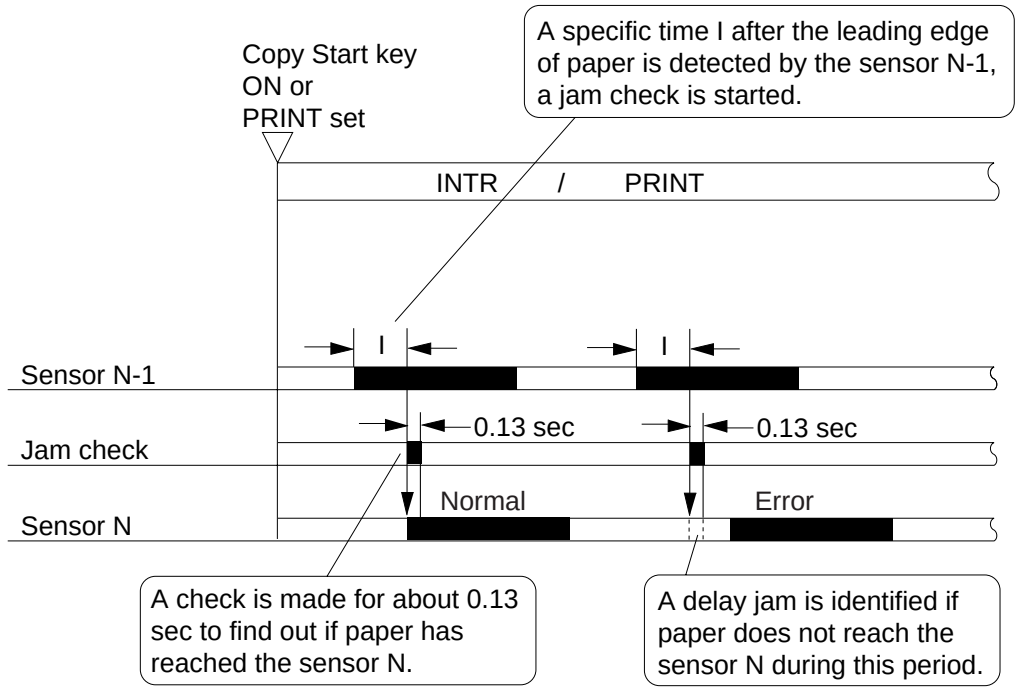

Copy Start key
ON or
PRINT set
A specific time I after the leading edge of paper is detected by the sensor N-1, a jam check is started.
INTR / PRINT
I
I
Sensor N-1
0.13 sec
0.13 sec
Jam check
Normal
Error
Sensor N
A check is made for about 0.13 sec to find out if paper has reached the sensor N.
A delay jam is identified if paper does not reach the sensor N during this period.

Figure 7-703 Detecting Other Delay Jams

Delay jam sensor N	Sensor N-1	Time used I (sec)
Right deck feed sensor (PS27)	Right deck pickup sensor (PS20)	0.12
Left deck feed sensor (PS26)	Left deck pickup sensor (PS25)	0.12
Vertical path 1 sensor (PS47)	Vertical path 2 sensor (PS49)	0.58
Vertical path 1 sensor (PS47)	Left deck feed sensor (PS26)	0.24
Vertical path 1 sensor (PS47)	Post-confluence sensor (PS15)	0.88
Vertical path 2 sensor (PS49)	Vertical path 3 sensor (PS41)	0.38
Vertical path 3 sensor (PS41)	Vertical path 4 sensor (PS46)	0.37
Vertical path 3 sensor (PS41)	Cassette 3 pickups sensor (PS37)	0.12
Vertical path 4 sensor (PS46)	Cassette 4 pickup sensor (PS42)	0.12
Registration sensor (PS5)	Pre-registration sensor (PS47)	0.53
Registration sensor (PS5)	Manual feed sensor (PS35)	0.37
Internal delivery sensor (PS9)	Claw jam sensor (PS6)	0.13
External delivery sensor (PS10)	Internal delivery sensor (PS9)	0.26
External delivery sensor (PS10)	Fixing feeding outlet sensor (PS11)	0.27
Reversal sensor (PS16)	Internal delivery sensor (PS9)	0.18
Reversal sensor (PS16)	Fixing feeding outlet sensor (PS11)	0.10
Duplexing reversal sensor (PS12)	Fixing feeding outlet sensor (PS11)	0.30
U-turn sensor (PS13)	Duplexing reversal sensor (PS12)	0.27
Pre-confluence sensor (PS14)	U-turn sensor (PS13)	1.08
Post-confluence sensor (PS15)	Pre-confluence sensor (PS14)	0.38
Post-confluence sensor (PS15)	Left deck feed sensor (PS26)	0.17

Table 7-703 Time Period

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2. Stationary Jams

a. Common Stationary Jams

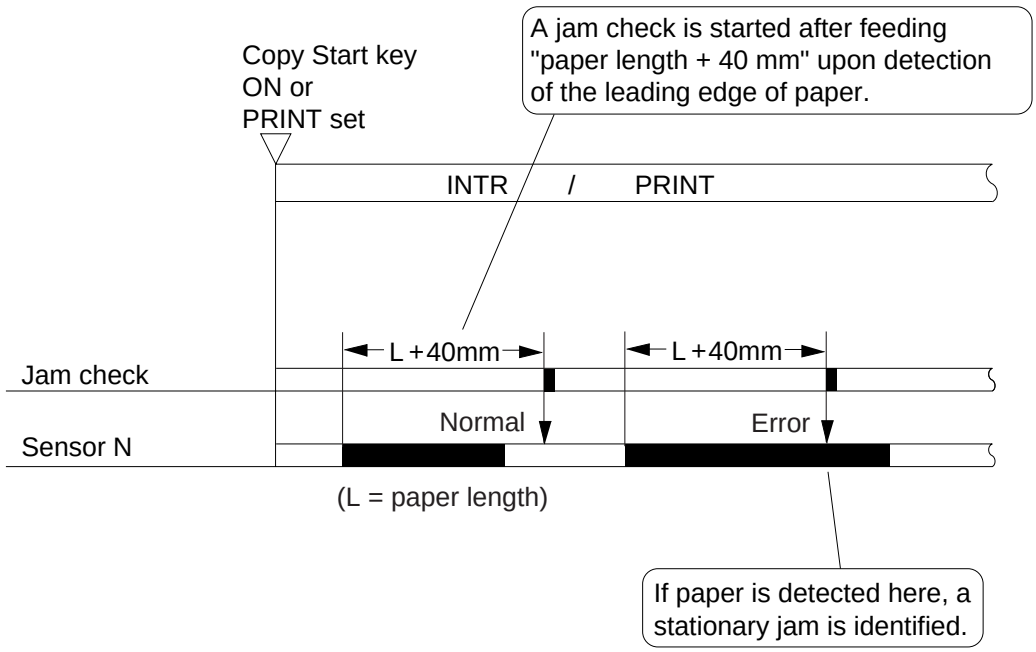

A jam check is started after feeding "paper length + 40 mm" upon detection of the leading edge of paper.
Copy Start key ON or PRINT set
INTR / PRINT
L +40mm
L +40mm
Jam check
Normal
Error
Sensor N
(L = paper length)
If paper is detected here, a stationary jam is identified.

Figure 7-704 Detecting Stationary Jams

b. Stationary Jam at Power-On

A stationary jam at power-on is identified in relation to the presence/absence of paper over a specific sensor about 1 sec after the control panel power switch is turned on.

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VIII . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. Manual Tray Assembly

1. Removing the Manual Tray Unit

1) Remove the two screws [1], and detach the delivery tray unit [2].

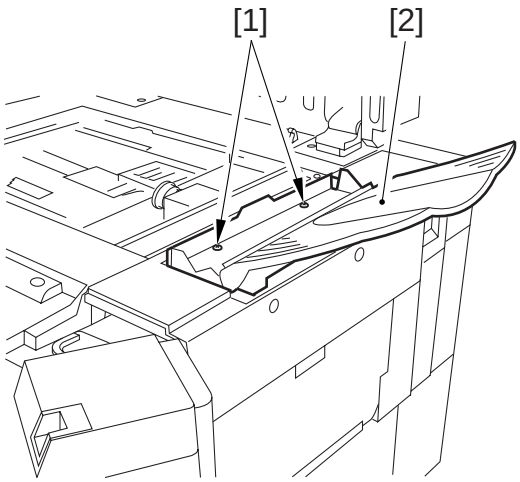


Figure 7-A801

2) Remove the four screws [3], and detach the upper right cover [5] while the toner cartridge cover [4] is open.

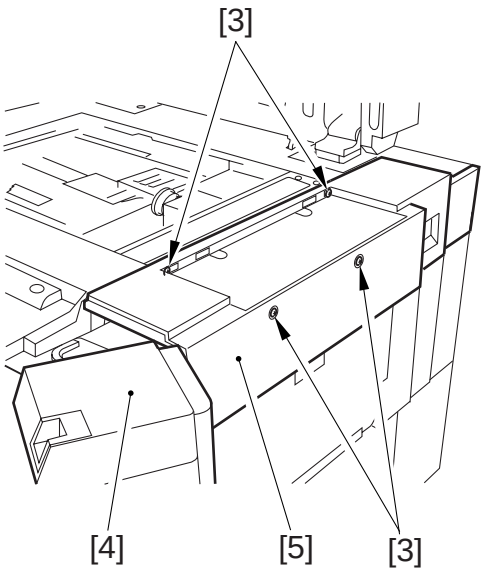


Figure 7-A802

3) Remove the screw [6], and disconnect the connector [7]; then, detach the manual feed tray unit [8].

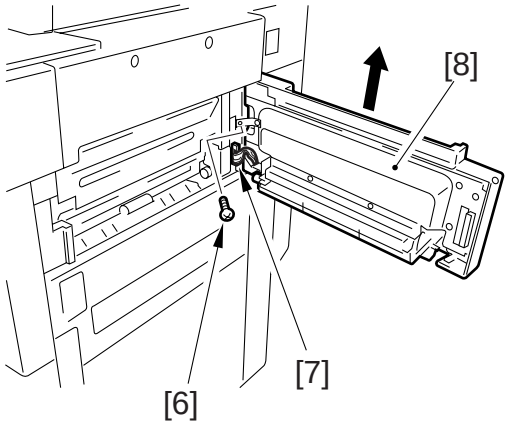


Figure 7-A803

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2. Removing the Pickup Roller

1) Open the manual tray paper guide.
2) Remove the left/right stop rings [1] (two each), shutters [2] (two each), spacers [3] (two each), and rolls [4] (two each).

Caution:

If the multifeeder is used during installation or if the multifeeder has not been used for a long time, pickup can fail. If such happens, detach the protective sheet from the sponge roller, and dry wipe the sponge roller.

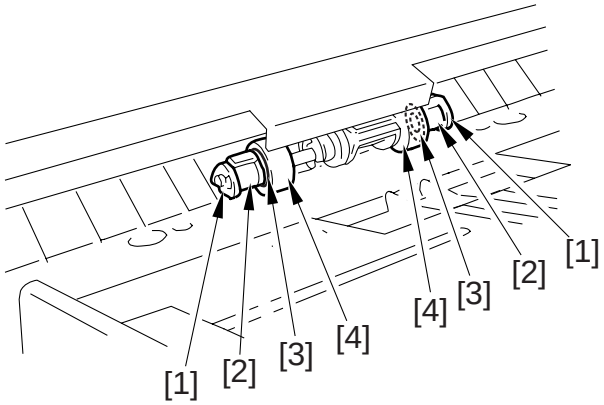


Figure 7-A804

3. Mounting the Pickup Roller

Mount the pickup roller by reversing the steps used to remove it with the following in mind:

- The front pickup roller and the rear pickup roller are not interchangeable.
- The front pickup roller is identified by its silver-colored collar.

When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] on the collar (silver) is toward the copier's front,

- The rear pickup roller is identified by its gold collar.

When mounting the pickup roller [3] to the pickup assembly, be sure that the round marking [4] on the side of the roller and the round marking [5] on its collar (gold) are toward the copier's rear.

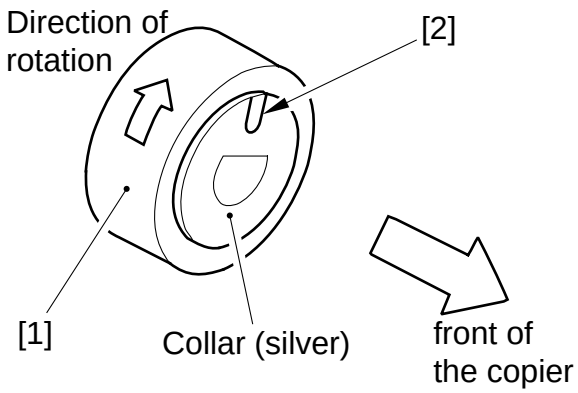


Figure 7-A805

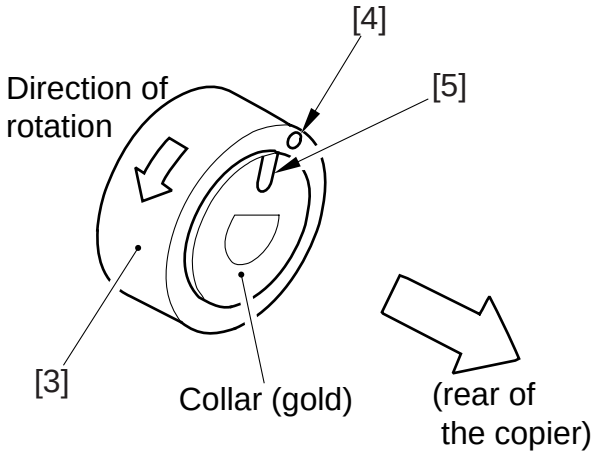


Figure 7-A806

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4. Removing the Feeding Roller

1) Remove the pickup roller, and remove the stop ring.
2) Remove the two screws [1], and detach the manual feed tray guide [2].

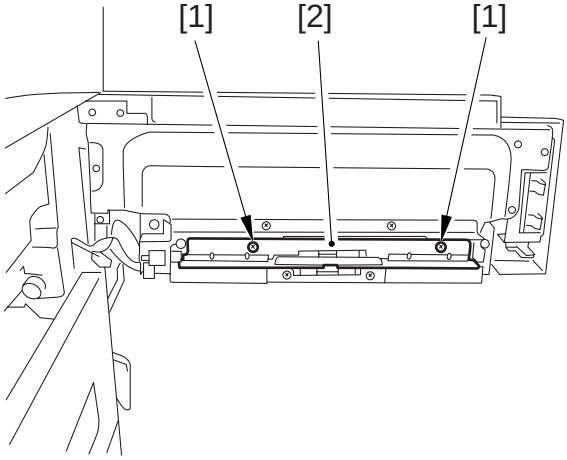


Figure 7-A807

3) Remove the stop ring [3] from the front of the feeding roller assembly, and move the feeding roller assembly [5] together with the timing belt [4] to detach.

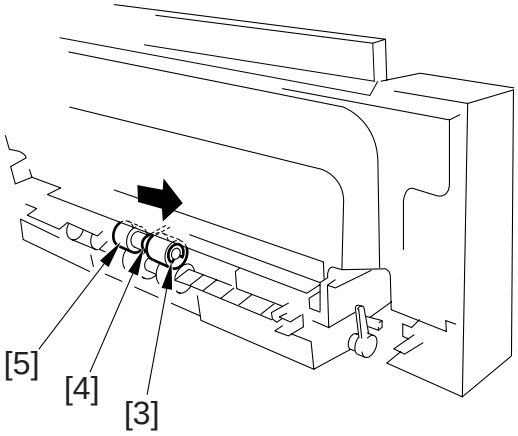


Figure 7-A808

5. Orientation of the Feeding Roller

When mounting the feeding roller [6] to the manual feed tray pickup assembly, be sure that the belt pulley [7] and the round marking [8] are toward the copier's front.

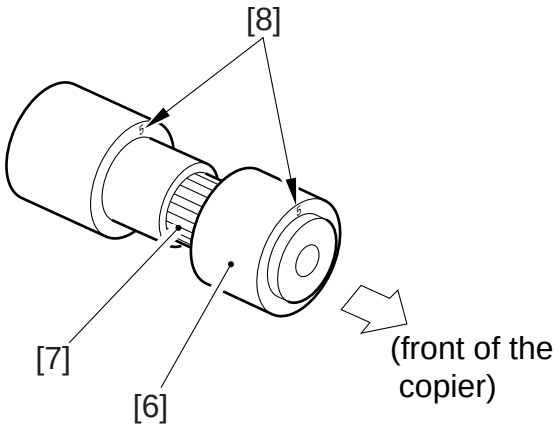


Figure 7-A809

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6. Removing the Separation Roller

1) Remove the two mounting screws [1], and detach the separation roller support plate [2].
2) Remove the joint [3], and detach the separation roller [4].

Caution 1:
When removing the separation roller, pay attention to the bushing at the front. It will slip off.

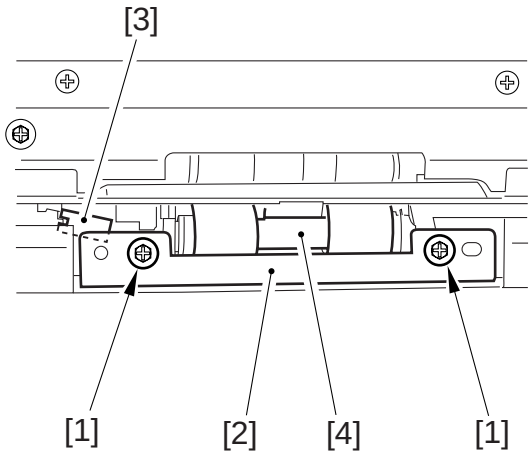


Figure 7-A810

Caution 2:
Initially, the urethane sponge of the part is pink, and changes over time (accelerated if exposed to light).
Its tone will change from pink to orange and to yellow; it is a general characteristic of urethane sponge, and no physical deterioration (in performance) exists because of changes in color, and the part is not identified by color.

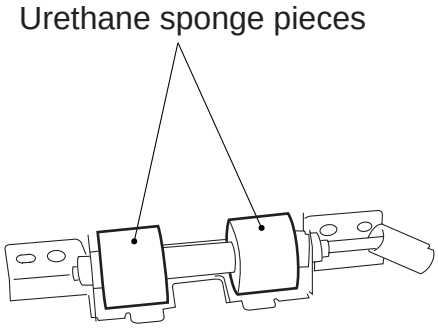


Figure 7-A811

7. Adjusting the Tension of the Separation Roller

If double feeding or pickup failure occurs, adjust the position of the pressure spring used for the separation roller.

- If double feeding occurs, move the spring in the direction of A.
- If pickup failure occurs, move the spring in the direction of B.

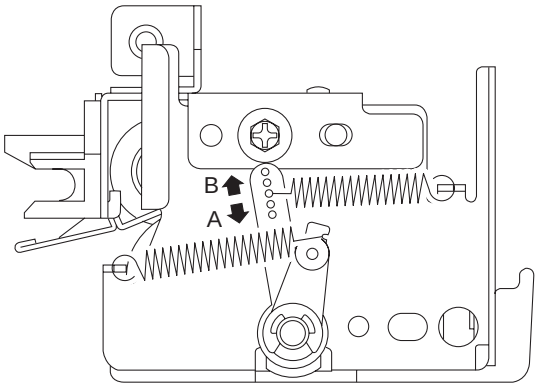


Figure 7-A812

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8. Removing the Manual Feed Tray Paper Sensor

1) Remove the mounting screw [1], and detach the solenoid cover [2].
2) Remove the mounting screw [3], and detach the solenoid [4] together with the upper plate.

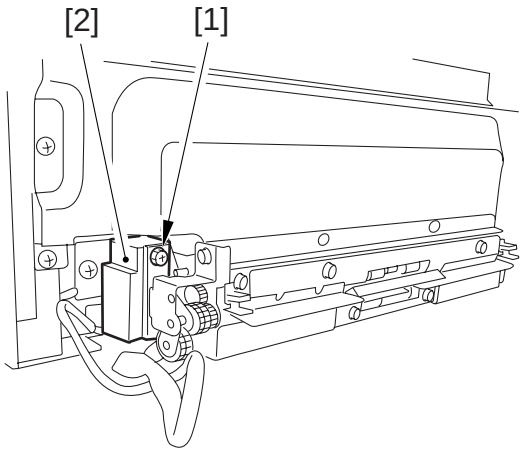


Figure 7-A813

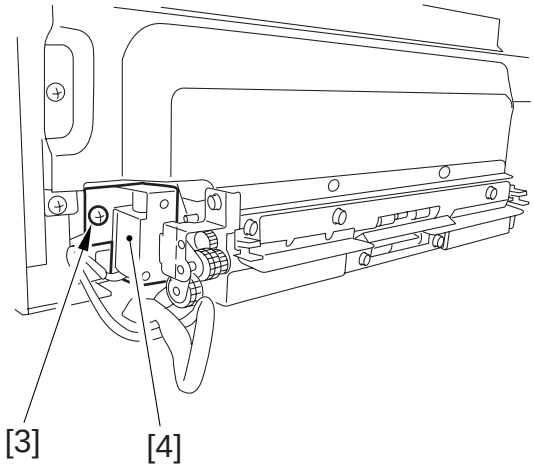


Figure 7-A814

3) Remove the screw [5], and detach the connector cover [6]; then, disconnect the connector [7].

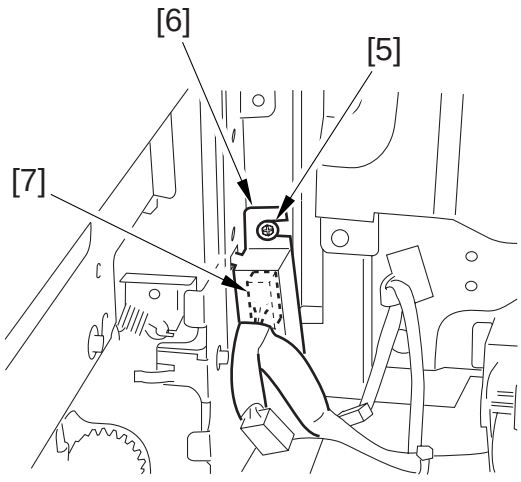


Figure 7-A815

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4) Remove the ten mounting screws [8], and detach the manual feed tray pickup assembly [9].

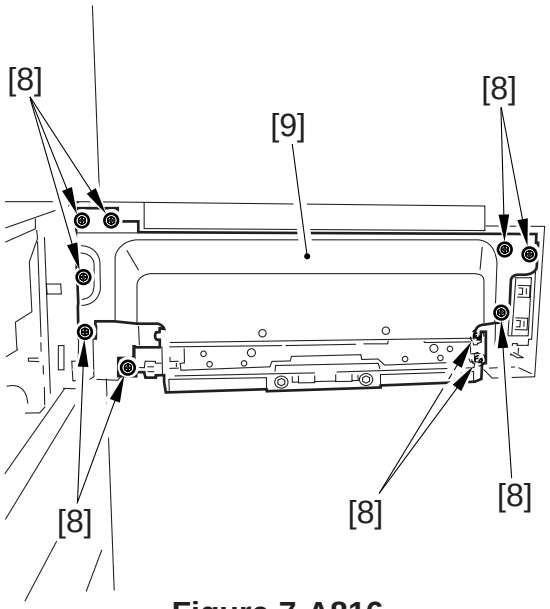


Figure 7-A816

5) Remove the two mounting screws [10], and detach the lower cover [11].

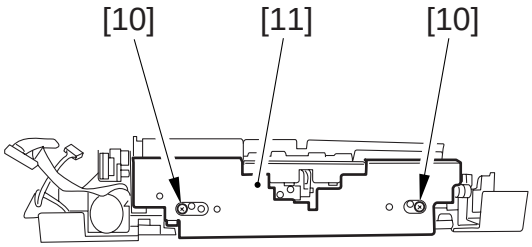


Figure 7-817

6) Remove the two mounting screws [12], and detach the guide plate [13].

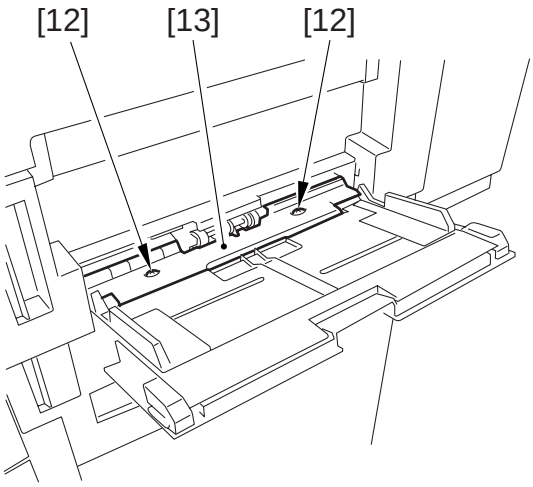


Figure 7-A818

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7) Remove the two mounting screws [14], and remove the sensor mount [15].
8) Detach the sensor from the sensor mount.

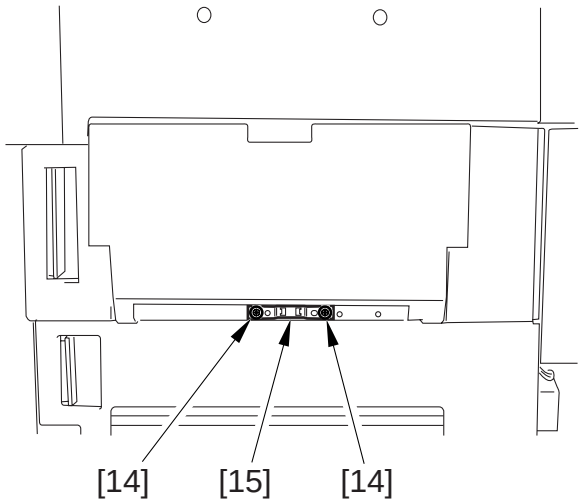


Figure 7-A819

9. Routing the Manual Feed Tray Assembly Side Guide Timing Belt

Butt the rack plate of the manual feed tray against section A (open condition).

Move the slide volume in the direction of B, and attach the timing belt to the pulley.

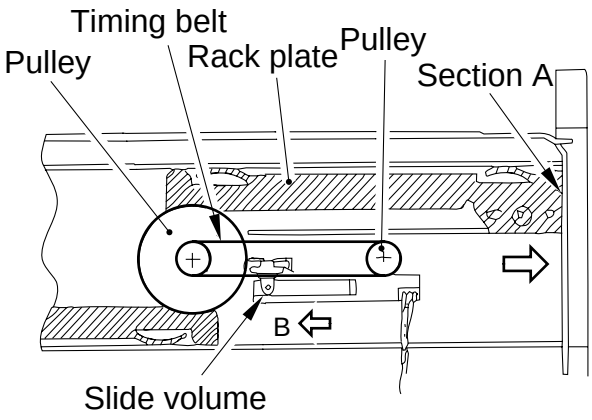


Figure 7-A820

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10. Position of the Pickup Roller Releasing Solenoid of the Manual Feed Tray

Slide the solenoid into the direction of A so that the gap between the shutter [1] and the shutter plate [2] is 0.4 ±0.2 mm when the solenoid is pulled.

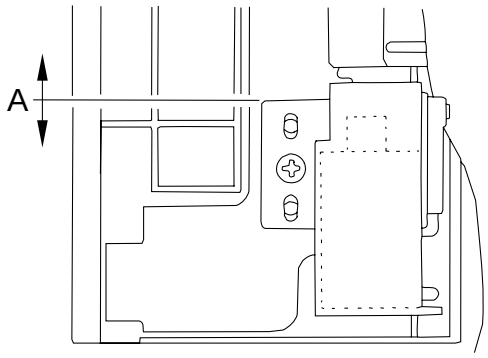


Figure 7-A821

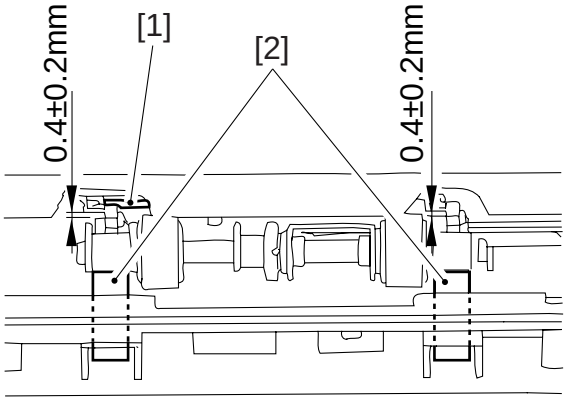


Figure 7-A822

11. Removing the Manual Feed Roller

1) Open the manual feed tray door.
2) Remove the two screws [3], and detach the front fixing plate [2] of the manual feed roller assembly [1].

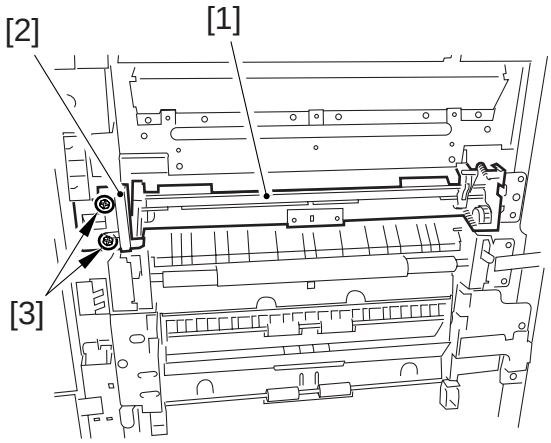


Figure 7-A823

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3) Remove the screw [5], and detach the rear fixing plate 1 [4]; then, detach the rear fixing plate 2 [6].

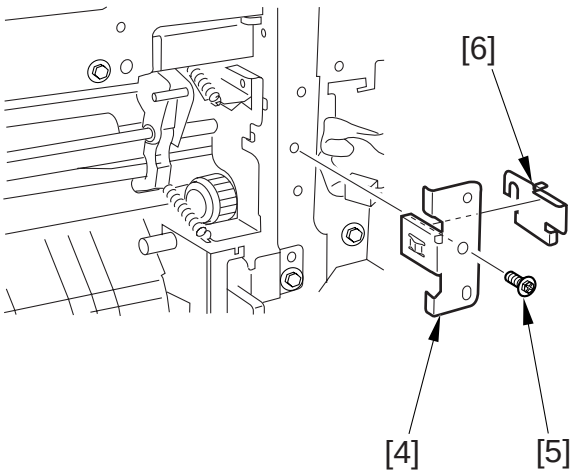


Figure 7-A824

4) Remove the E-ring [7], spacer [8], and bearing [9] at both front and rear; then, detach the manual feed roller [10].

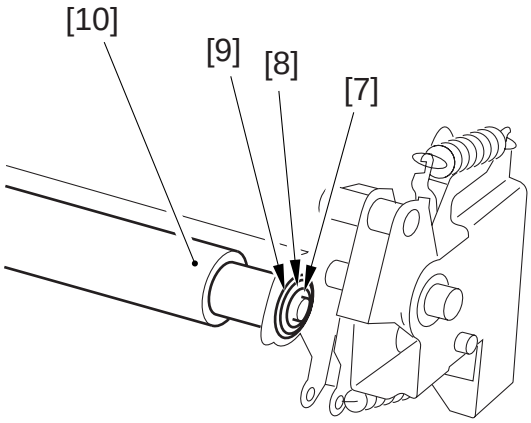


Figure 7-A825

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12. Mounting the Manual Feed Roller

1) Set the manual feed roller assembly to the copier.
2) Mount the rear fixing plate 2 and the rear fixing plate 1 in the order indicated; then, secure them in place with the mounting screw [3].

Caution:
When mounting the manual feed roller, hook the two claws of the rear fixing plate 2 on the three holes in the rear side plate; then, mount the rear fixing plate 1 to secure.

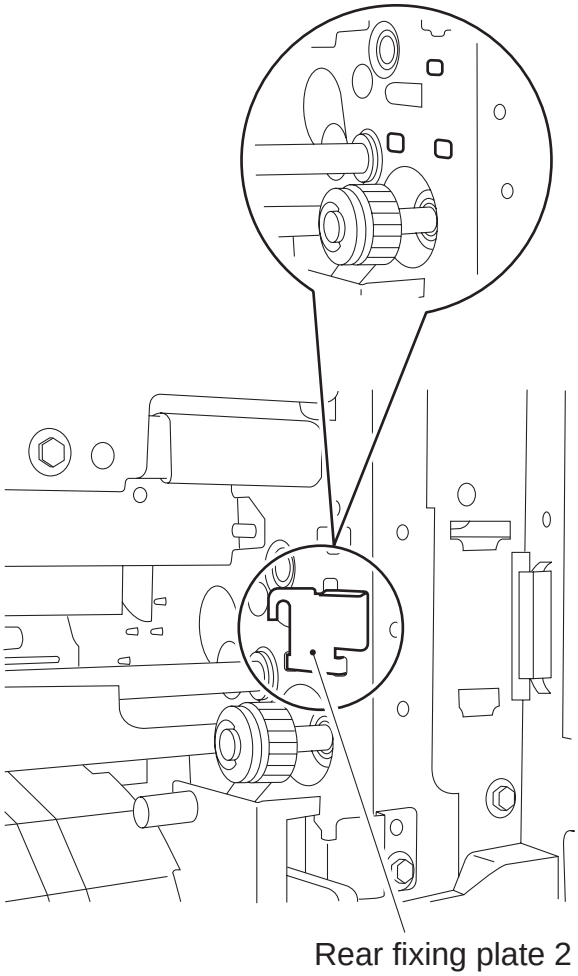


Figure 7-A826

3) Secure the front fixing plate [4] with two screws [5].

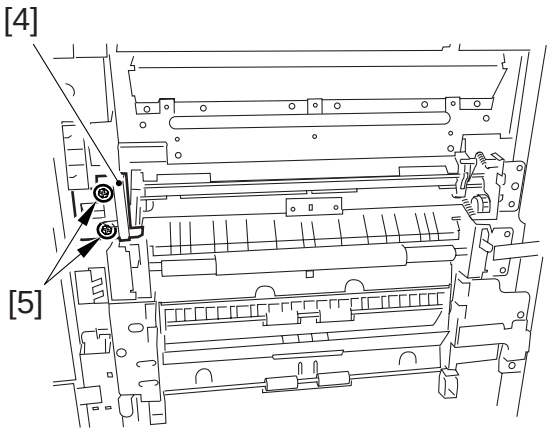


Figure 7-A827

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B. Cassette Pickup Assembly

1. Removing the Front Deck (right)

1) Slide out the deck.
2) Open the upper right cover and the lower right cover.

Caution:
The pickup assembly cannot be removed unless the deck has been removed (the lifter will get trapped).

3) Remove the mounting screw [1], and detach the connector cover [2]; then, disconnect the connector [3].
4) Remove the two mounting screws [4], and detach the pickup assembly [5].

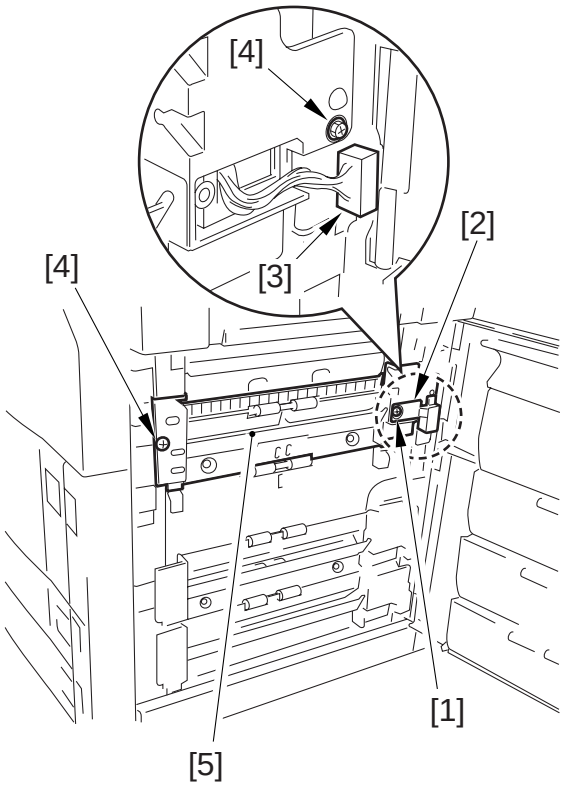


Figure 7-B801

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2. Removing the Pickup Assembly of the Front Deck (left)

1) Slide out the deck (right, left).
2) Remove the two stoppers [2] from both left and right of the deck (left) [1].

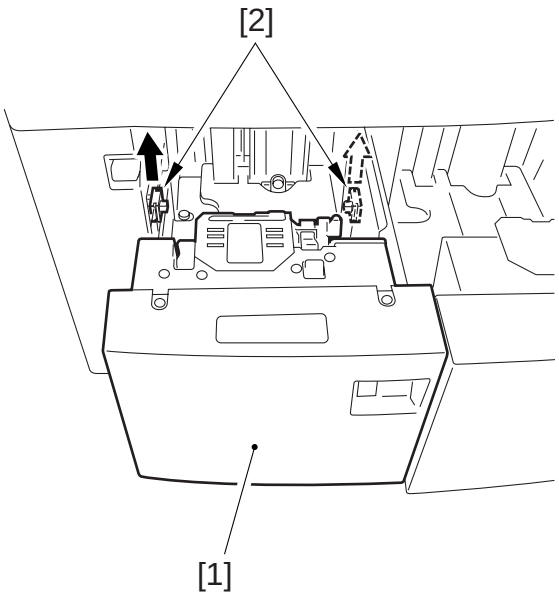


Figure 7-B802

3) Disconnect the connector [3] from inside the copier.

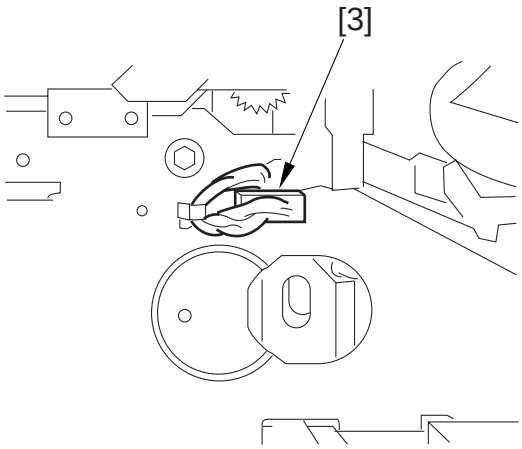


Figure 7-B803

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4) Remove the two screws [4], and remove the two pickup assembly fixing plate [5]; then, detach the cassette 2 pickup assembly [6].

Caution:
When removing the fixing plate, be sure to support the pickup assembly to avoid dropping it.

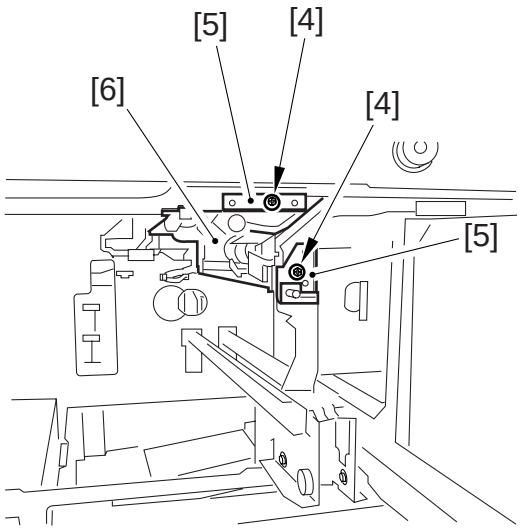


Figure 7-B804

3. Removing the Cassette 3 Pickup Assembly

Same as removing the deck (right) pickup assembly.

4. Removing the Cassette 4 Pickup Assembly

Same as removing the deck (right) pickup assembly.

5. Removing the Pickup Roller

1) Remove the pickup assembly from the copier.
2) Remove the two stop rings [1] on the outside, and move the pickup roller [2] in the direction of the arrow to detach.

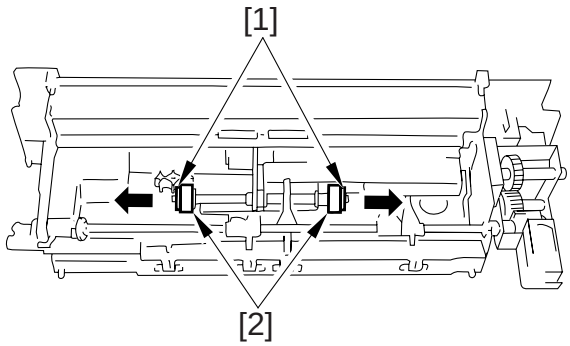


Figure 7-B805

■Orientation of the Pickup Roller

Mount the pickup roller by reversing the steps used to remove it with the following in mind:

- The front pickup roller and the rear pickup roller are not interchangeable.
- The collar of the front pickup roller is gold in color.

When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] on the side of the roller and the round marking [3] on the collar (gold) are toward the copier's front.

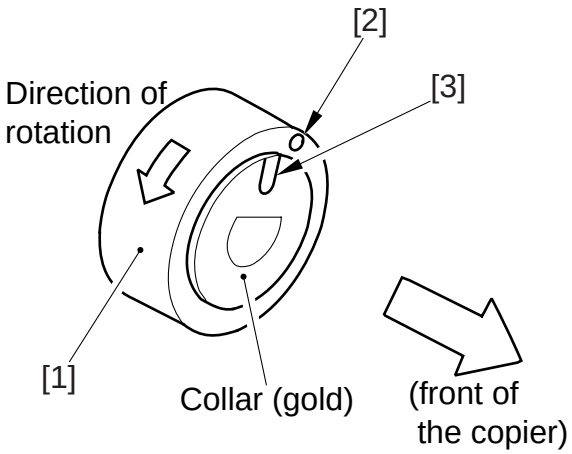


Figure 7-B806

- The collar of the rear pickup roller is silver. When mounting the pickup roller [4] to the pickup assembly, be sure that the round marking [5] on the collar (silver) is toward the rear.

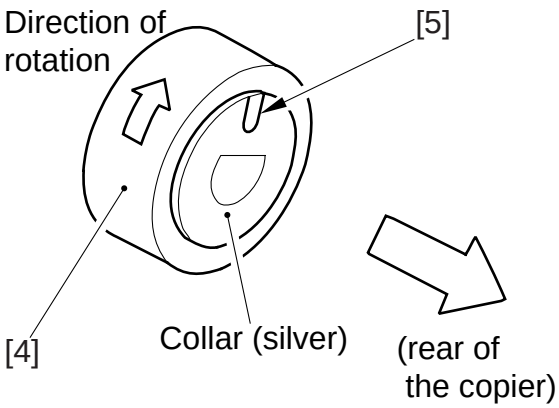


Figure 7-B807

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6. Removing the Feeding Roller

1) Remove the pickup assembly from the copier.
2) Remove the screw [2], and detach the feeding roller cover [1].
3) Remove the stop ring [3] form the front of the fixing roller.
4) Remove the stop ring [4] and the pickup roller [5] at the font; then, detach the feeding roller [7] together with the timing belt [6].

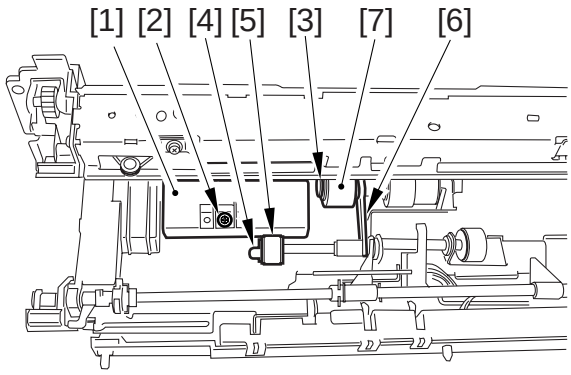


Figure 7-B808

7. Orientation of the Feeding Roller of the Cassette Pickup Assembly

When mounting the feeding roller assembly [1] to the cassette pickup assembly, be sure that the belt pulley [2] is toward the copier's front.

When mounting the feeding roller [3] to the feeding roller shaft [4], be sure that the round marking [5] is toward the copier's front.

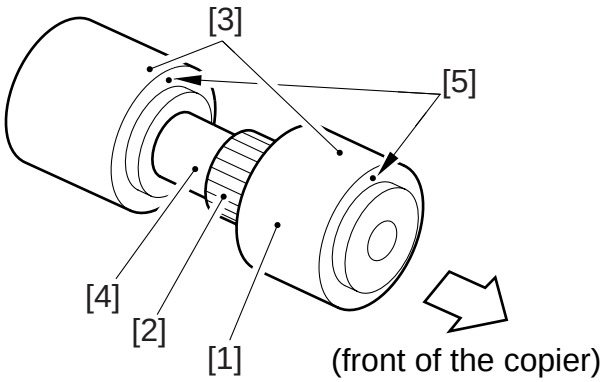


Figure 7-B809

8. Removing the Separation Roller

1) Remove the two mounting screws [1], and remove the feeding guide plate [2]; then, detach the open/close guide [3].
(Skip this step for the pickup assembly of the front deck left.)

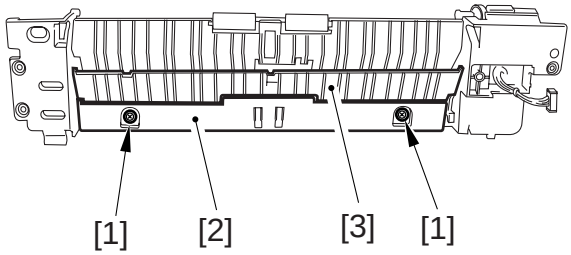


Figure 7-B810

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2) Remove the two mounting screws [4], and remove the separation roller assembly [5] from the joint. (If for the pickup assembly of the front deck left, remove one screw.)

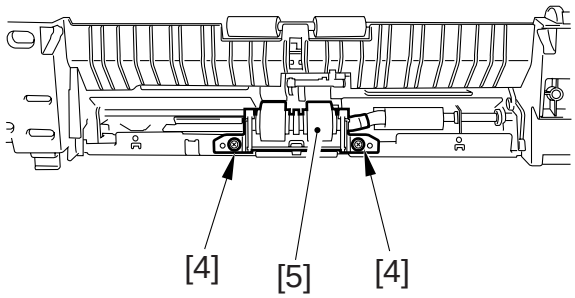


Figure 7-B811

3) Detach the separation roller [6] from the separation roller shaft mount.

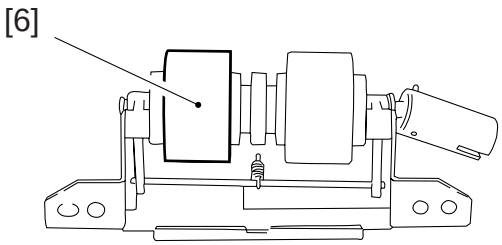


Figure 7-B812

Caution:
Initially, the urethane sponge of the part is pink, and changes over time (accelerated if exposed to light).
Its tone will change from pink to orange and to yellow; it is a general characteristic of urethane sponge, and no physical deterioration (in performance) exists because of changes in color, and the part is not identified by color.

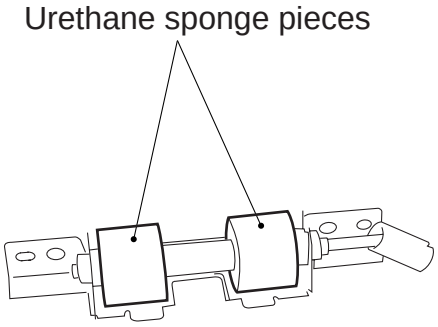


Figure 7-B813

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9. Adjusting the Pressure of the Separation Roller

If double feeding or pickup failure occurs, adjust the position of the pressure spring used for the separation roller.

- If double feeding occurs, move the spring in the direction of B.
- If pickup failure occurs, move the spring in the direction of A.

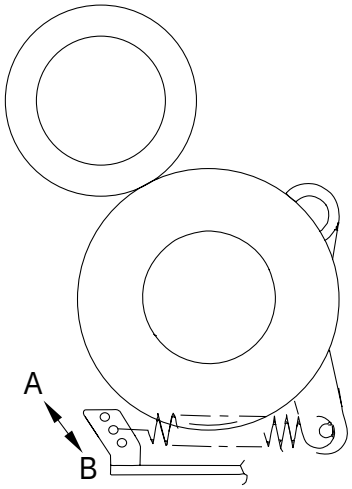


Figure 7-B814

10. Orientation of the Separation Roller

Keep the following in mind when replacing the separation roller.

Caution:

If mounted in the wrong orientation, interference with the clamp washer can lead to faults. Take care.

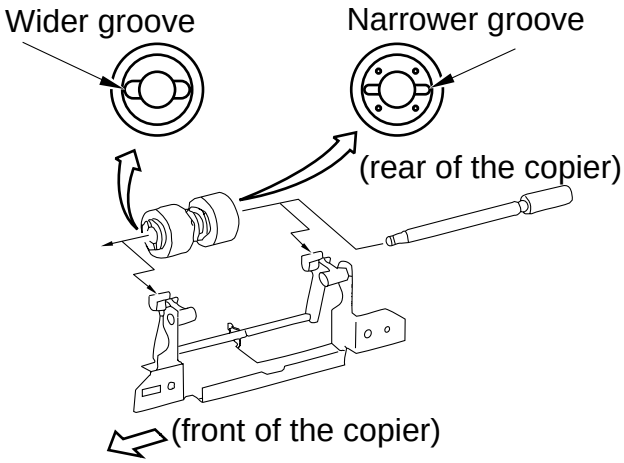


Figure 7-B815

11. Position of the Pickup Roller Releasing Solenoid of the Cassette (3/4)

As shown in Figure 7-B816, adjust the position of the solenoid by using the two screws [3] so that the distance from the bottom of the pickup assembly and section A of the roller arm is 36 ±0.5 mm when [1] and [2] are operated.

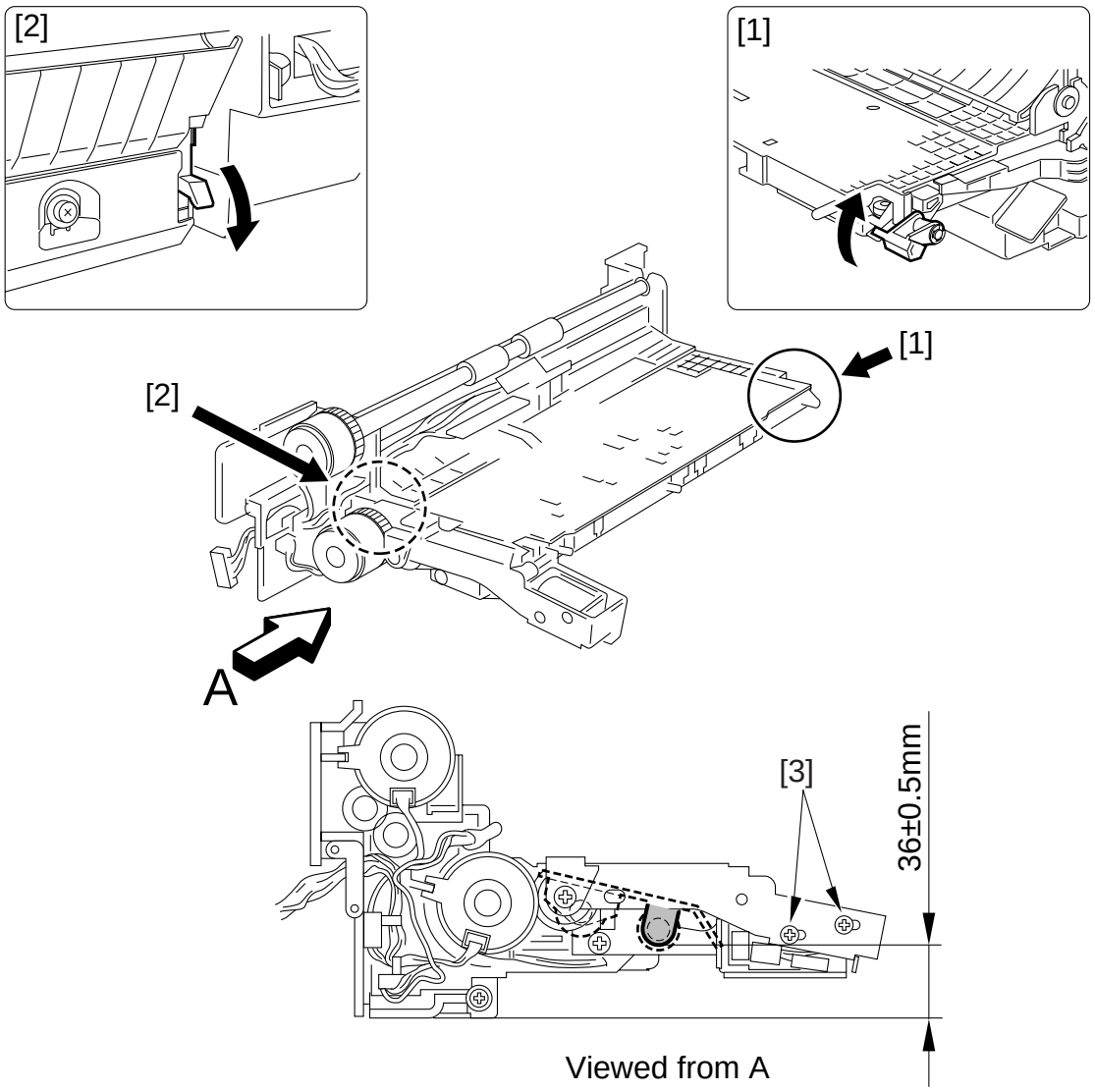


Figure 7-B816

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12. Adjusting the Registration of the Front Deck (right/left)

1) Loosen the four screws [2] on the cassette front cover [1] and the two fixing screws [3].

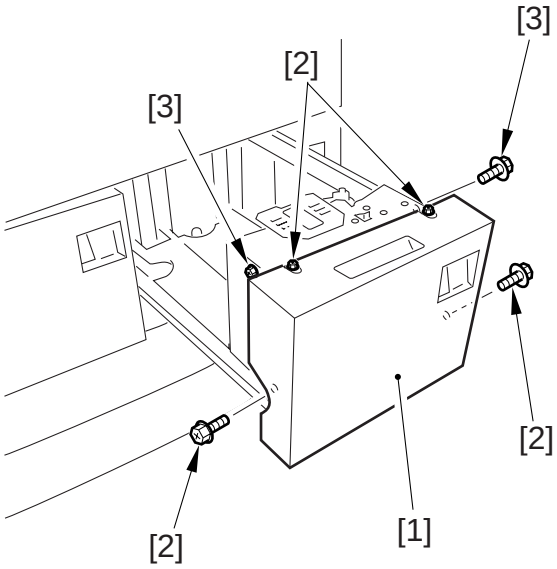


Figure 7-B817

2) Move the cassette guide assembly (front) [4] to the front or the rear to make adjustments.

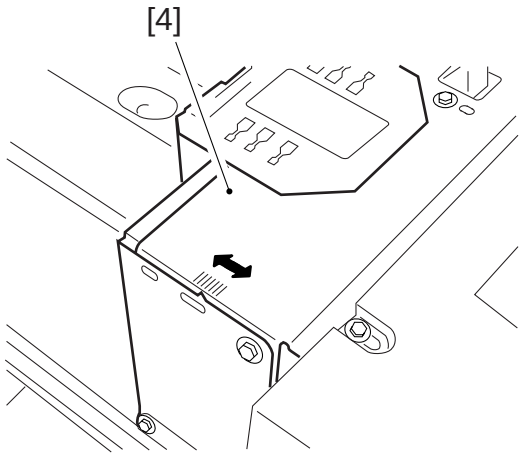


Figure 7-B818

13. Adjusting the Registration of the Cassette 3/4

1) Remove the two screws [1], and detach the cassette front cover [2].

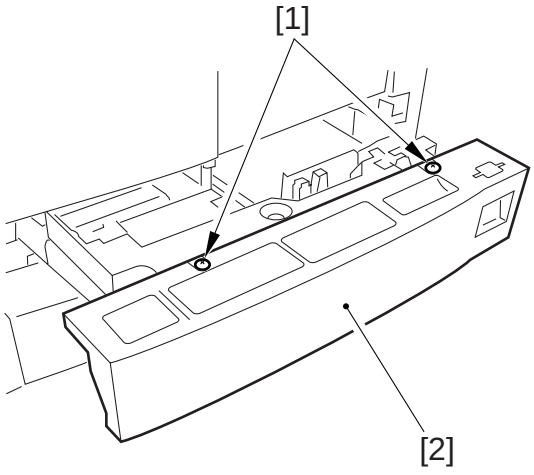


Figure 7-B819

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2) Loosen the two fixing screws [3] on the cassette (left/right), and make adjustments using the adjusting screw [4].
After adjustment, be sure to execute COPIER>FUNCTION>CST>C3-STMTR/AR or C4-STMTR/A4R in service mode.

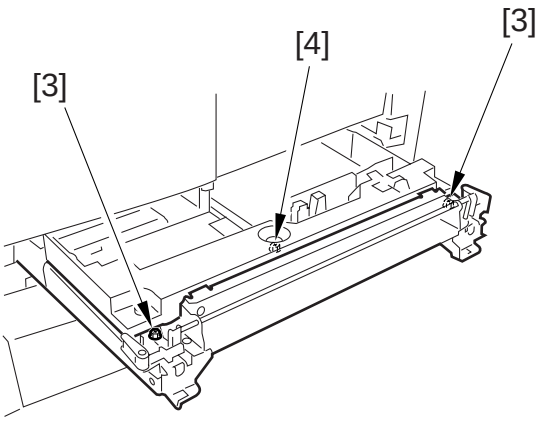


Figure 7-B820

14. Removing the Lifter Motor (M16/M17) of the Cassette (3/4)

1) Slide out the front deck (right); then, slide out the cassette 3/4.
2) Remove the right cover of the cassette assembly as instructed under C.2. "Removing the Vertical Path Roller 2."
3) Remove the two fixing screws [1] of the lifter motor (M16/M17), and disconnect the connector [2]; then, detach the lifter motor [3].

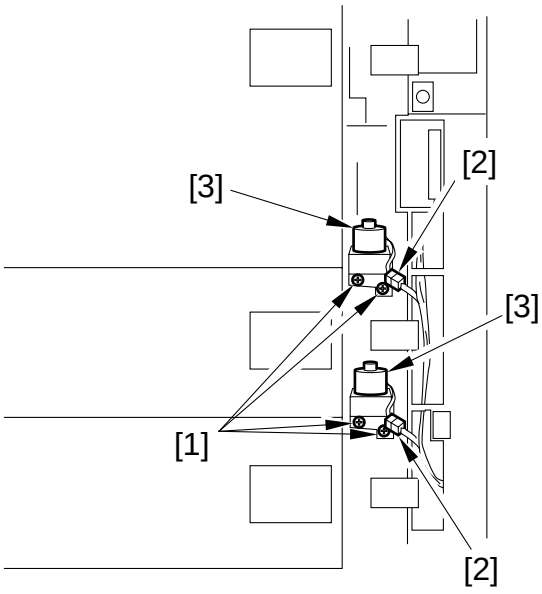


Figure 7-B821

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15. Adjusting the Position of the Lifter Motor M16 (M17) for the Cassette 3 (4)

1) Remove the guide plate 1 of the vertical path roller 2 as instructed under C.2. "Removing the Vertical Path Roller 2."
(In the case of the lifter motor M17, remove the cassette 3 pickup assembly 2 using the same instructions as in B.1. "Removing the front deck (right) Pickup Assembly.")

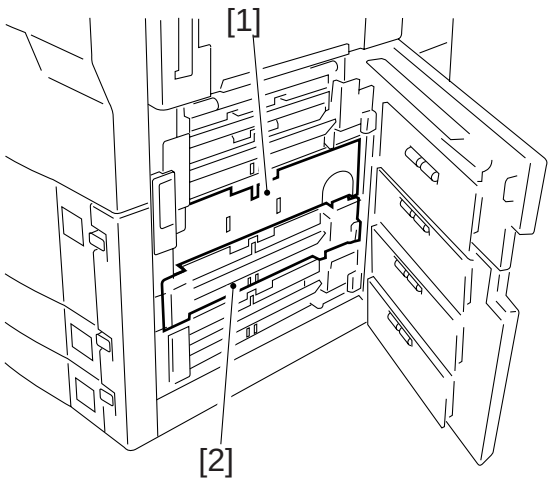


Figure 7-B822

2) Move the lifter motor (M16/M17) [3] to the right, and fix it with the screw [4] in place temporarily.

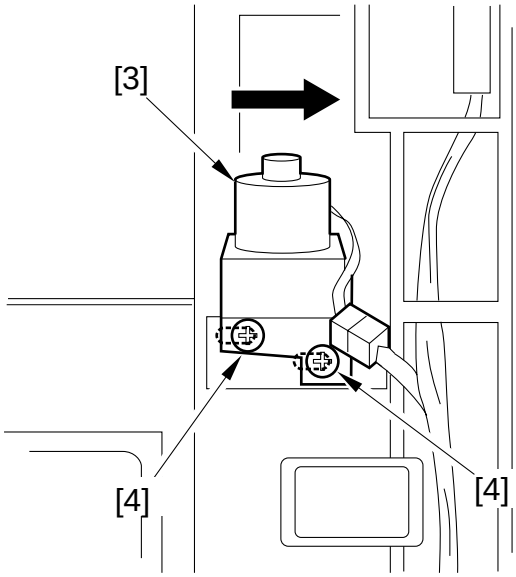


Figure 7-B823

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3) Set the cassette 3/4 in the copier without paper inside.
4) Check to make sure that the lifter drive gear [5] is engaged with the lifter motor gear [6] by looking from the copier's right side. Then, check to make sure that the lifter drive gear is fully away from the lifter motor gear when the cassette 3/4 releasing button [7] is pushed halfway.

Caution:
The releasing button is pushed "halfway" so that
- The separation roller moves down.
- The cassette is just about to slide out.

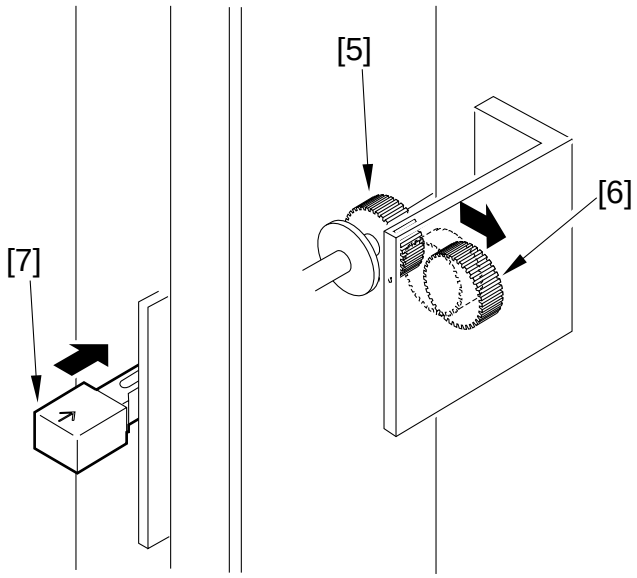


Figure 7-B824

5) If the lifter drive gear is not fully away from the lifter motor gear, move the lifter motor (M16/M17) [7] to the left, and push the releasing button halfway once again to make a check.
6) Secure the lifter motor M16/M17 fully with two screws.
7) Mount the removed parts, and turn on the copier.
8) Push the cassette releasing button under the following conditions to make sure that the cassette is slid out normally.
   - The cassette contains no paper.
   - The cassette contains about 500 sheets of paper.

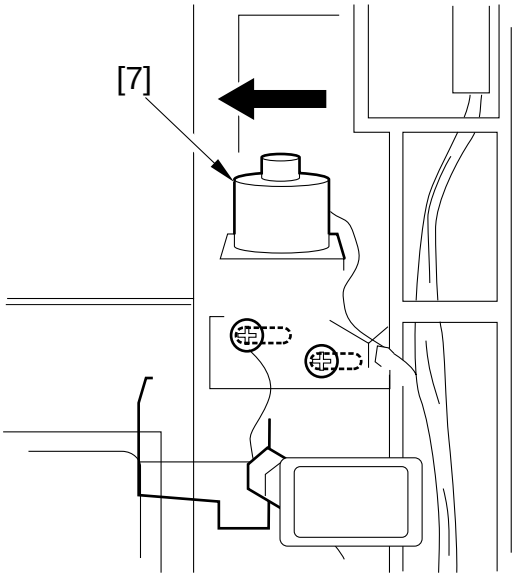


Figure 7-B825

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C. Vertical Path Roller Assembly

1. Removing the Vertical Path Roller 1/3/4

1) Remove the cassette pickup assembly.
2) Remove the E-ring [1] and the bearing [2] at the front; then, remove the grip ring [3], clutch [4], and bearing [5] at the rear.

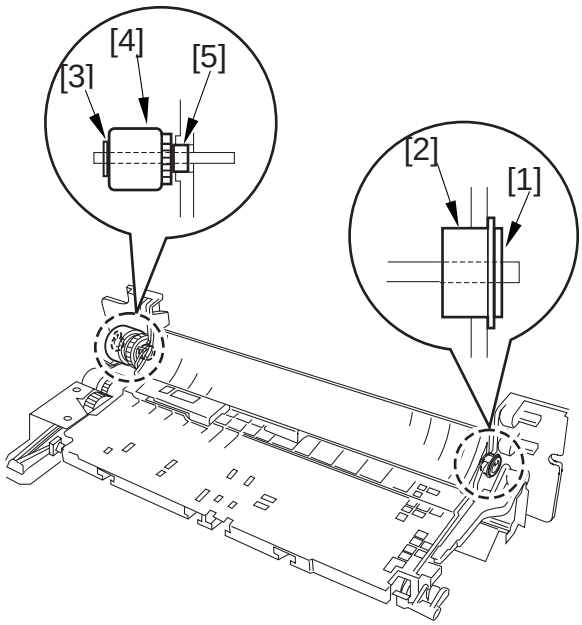


Figure 7-C801

3) Remove the E-ring [6] at the front and the rear of the roller shaft; then, move the bearing [7] (on both sides) to the center, and detach the guide plate [8].
Remove the vertical path roller [9].

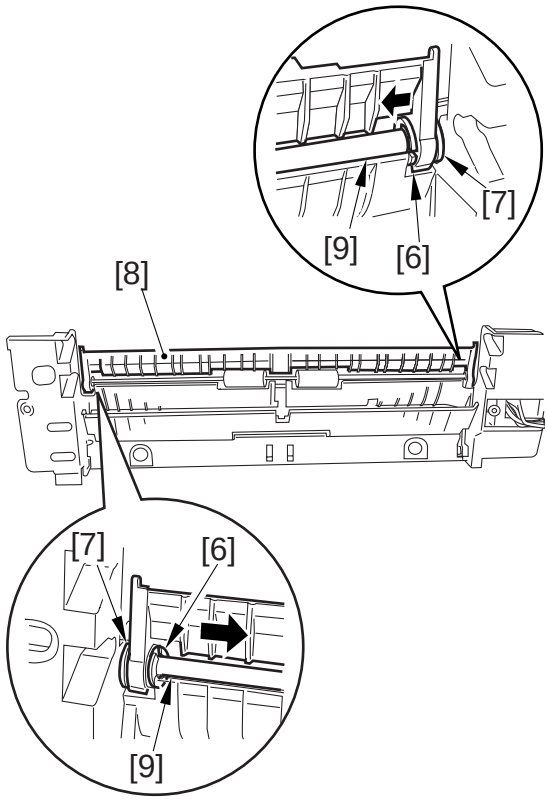


Figure 7-C802

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2. Removing the Vertical Path Roller 2

1) Remove the deck (right), and slide out the cassette 3/4.
2) Remove the four screws [1], and detach the cassette mount right cover [2].

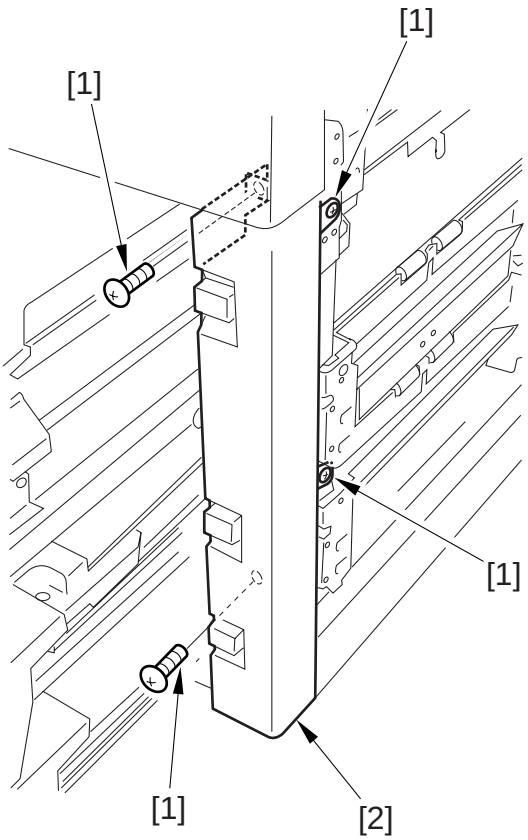


Figure 7-C803

3) Disconnect the connector [3], and remove the screw [4]; then, detach the guide plate [5].

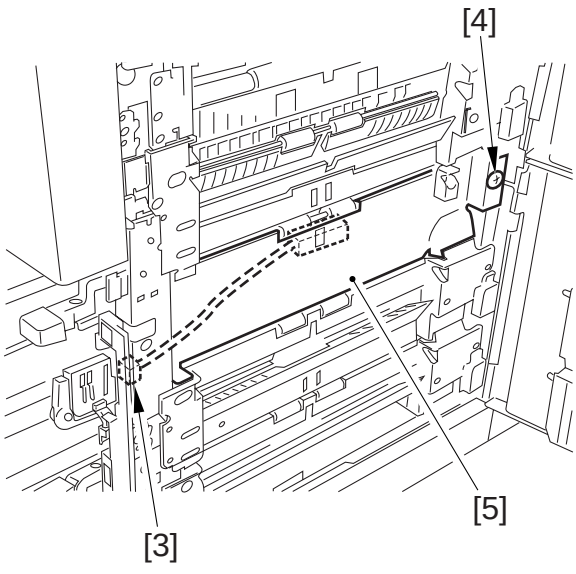


Figure 7-C804

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4) Remove the E-ring [6] at the front of the roller shaft; then, move the bearing [7] to the center, and detach the vertical path roller 2 [8].

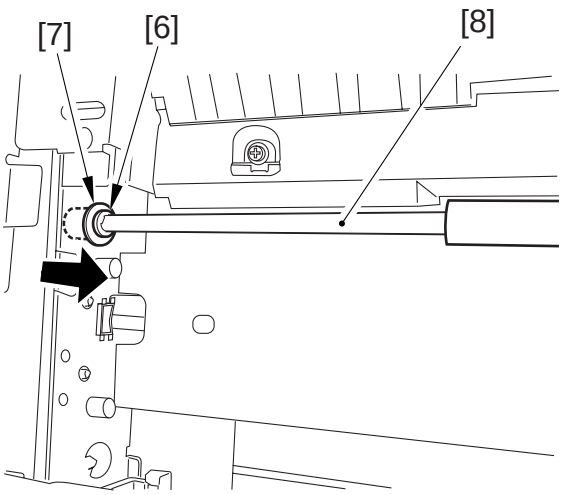


Figure 7-C805

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D. Registration Feeding Assembly

1. Removing the Registration Clutch/Registration Brake Clutch

1) Slide out the fixing feeding unit from the copier.
2) Disconnect the connector [1], and remove the grip ring [2]; then, detach the registration clutch [3].

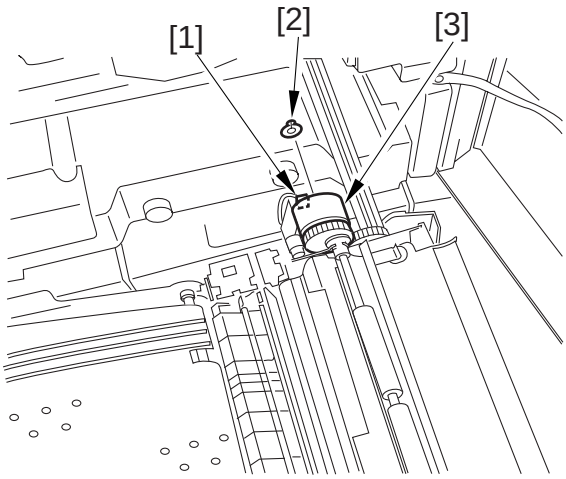


Figure 7-D801

2. Removing the Registration Brake Clutch

1) Remove the transfer separation charging assembly front cover.
2) Disconnect the connector [1], and remove the grip ring [2]; then, detach the registration brake clutch [3].

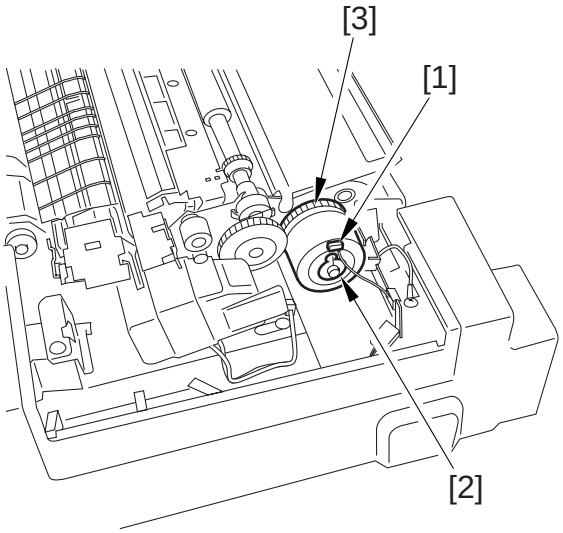


Figure 7-D802

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3. Removing the Registration Roller

1) Remove the front cover of the fixing feeding unit.
2) Remove the transfer separation charging assembly.
3) Remove the registration brake clutch.
4) Remove the E-ring [1], and detach the clutch drive gear [2].

Caution:
When removing the drive gear, take care not to drop the pin.

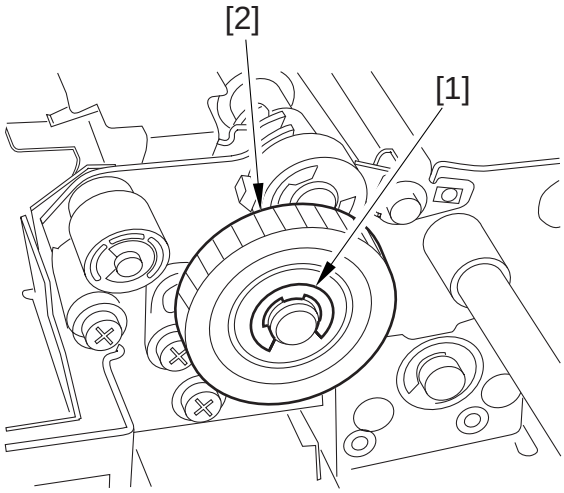


Figure 7-D803

5) Remove the spring [3], E-ring [4], and bushing [5] at the front.

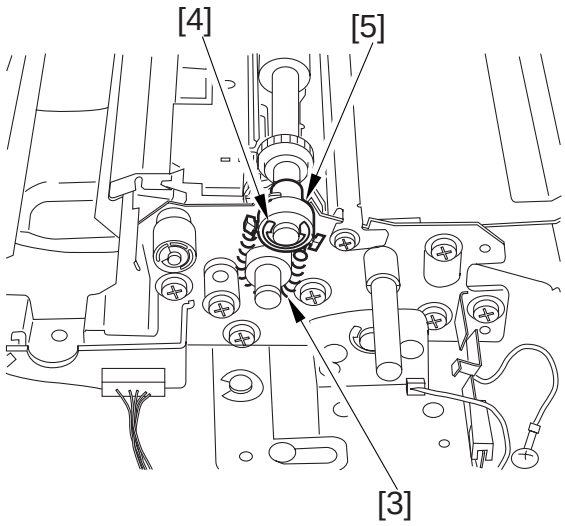


Figure 7-D804

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6) Remove the registration clutch.
7) Remove the spring [6], E-ring [7], spacer [8], and bushing [9] at the rear; then, detach the registration roller [10].

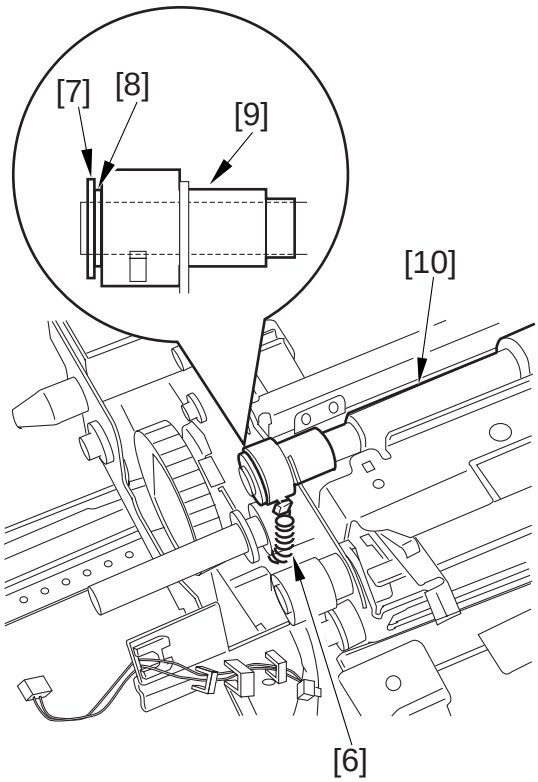


Figure 7-D805

4. Removing the Pre-Registration Roller

1) Open the middle right cover, and remove the screw [1]; detach the connector cover [2], and remove the two screws [3]; then, detach the rear fixing plate [4].

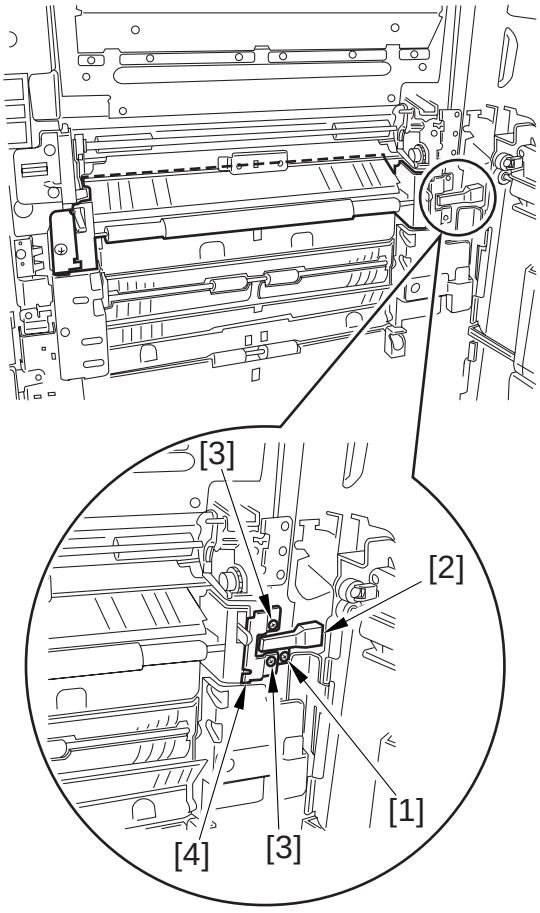


Figure 7-D806

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2) Remove the screw [5], and detach the front fixing plate [6]; then, detach the pre-registration roller assembly [7].

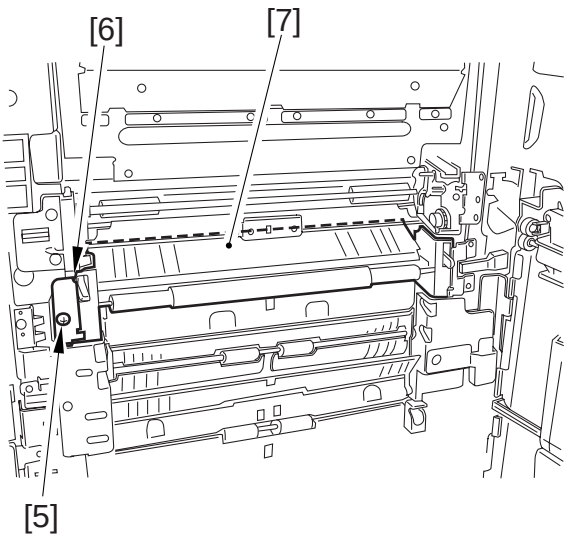


Figure 7-D807

3) Remove the two springs [8], E-ring [9], and arm support shaft [10] at the front.
4) Remove the E-ring [11], spacer [12], and bearing [13].

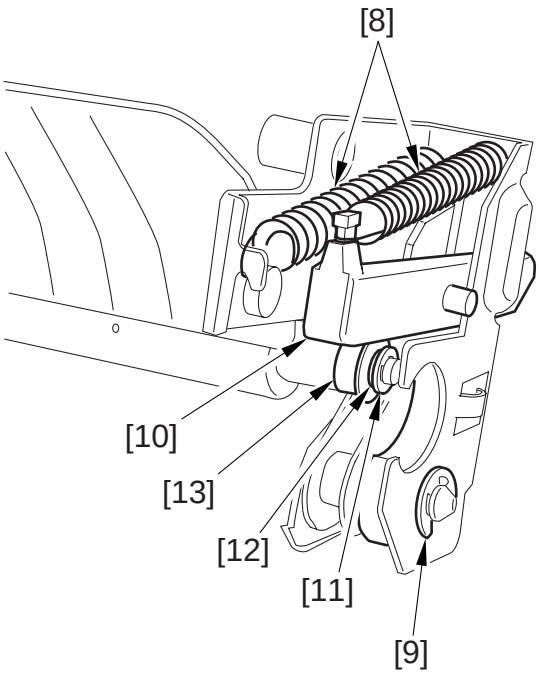


Figure 7-D808

5) Perform steps 3) and 4) for the rear; then, detach the pre-registration roller assembly.

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E. Feeding Assembly

1. Removing the Feeding Belt

1) Slide out the fixing feeding unit from the copier.
2) Remove the fixing feeding unit front cover.
3) Disconnect the three connectors [1], and remove the screw [2]; then, detach the harness guide [3].

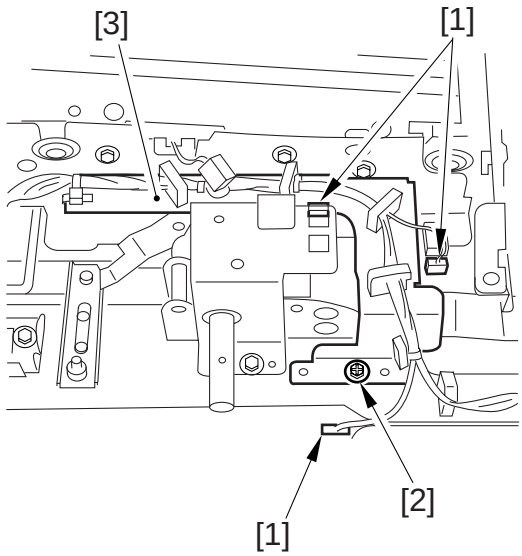


Figure 7-E801

4) Remove the two screws [4], and detach the fixing feeding unit releasing lever support plate [5].

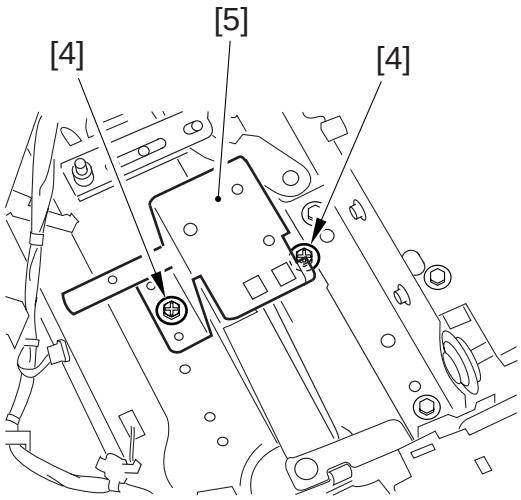


Figure 7-E802

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5) Remove the E-ring [6], bearing [7], and three screws [8].

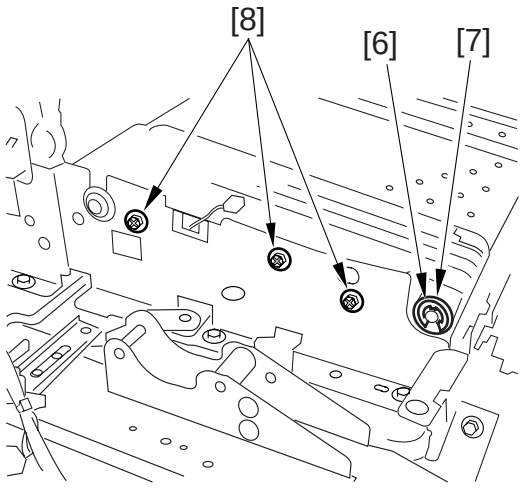


Figure 7-E803

6) Remove the E-ring [9], gear [10], pin [11], three screws [12], E-ring [13], and bearing [14].

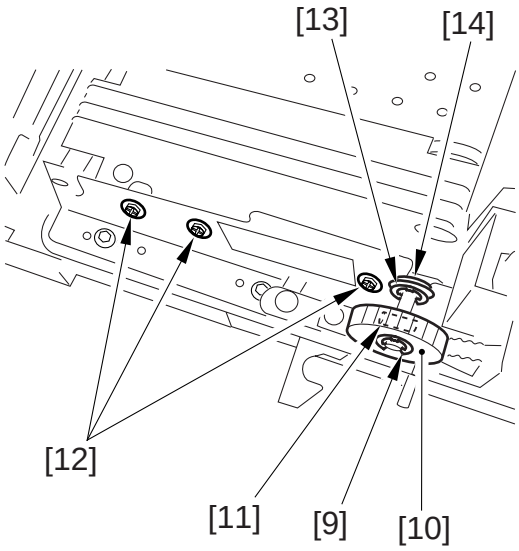


Figure 7-E804

7) Remove the feeding belt unit [15], and detach the feeding belt [16] and the postcard belt [17].

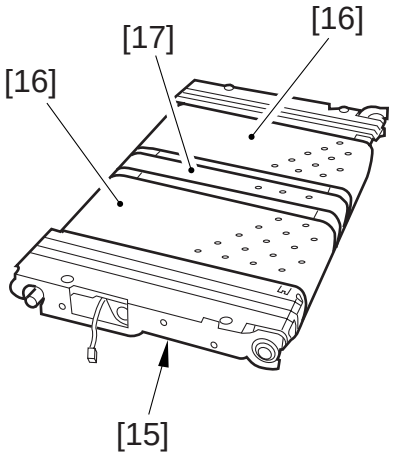


Figure 7-E805

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2. Removing the Fixing Feeding Unit Releasing lever Sensor

1) Slide out the fixing feeding unit from the copier.
2) Detach the fixing feeding unit front cover.
3) Release the claw of the fixing feeding unit releasing lever sensor [1].

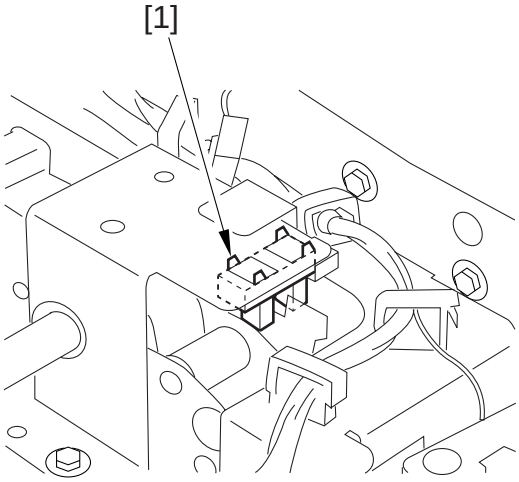


Figure 7-E806

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F. Duplexing Unit

1. Removing the Duplexing Unit

1) Slide out the duplexing unit from the copier.
2) Holding the left and right grips of the duplexing unit, detach it from the copier.

Caution:

Take care not to trap your hand between the grip and the rail. Do not place the duplexing unit where it is subjected to damage.

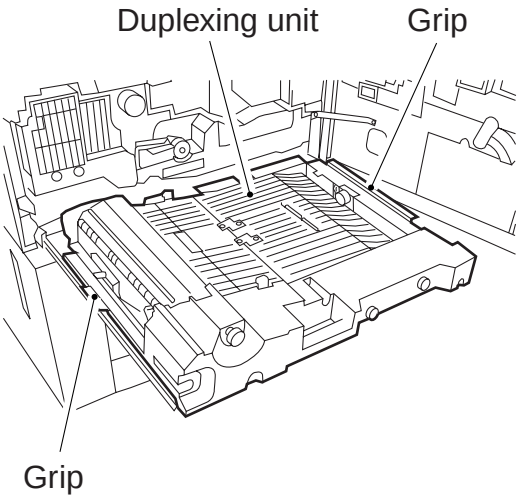


Figure 7-F801

2. Removing the Front Cover of the Duplexing Unit

1) Remove the four screws [1] and the three knobs [2]; then, detach the front cover [3].

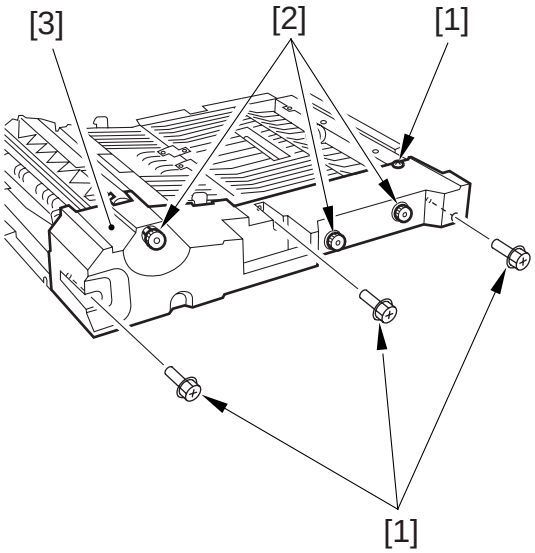


Figure 7-F802

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3. Removing the Reversing Flapper Solenoid

1) Remove the duplexing unit from the copier.
2) Remove the two screws [1], and disconnect the connector [2]; then, detach the reversing flapper solenoid [3].

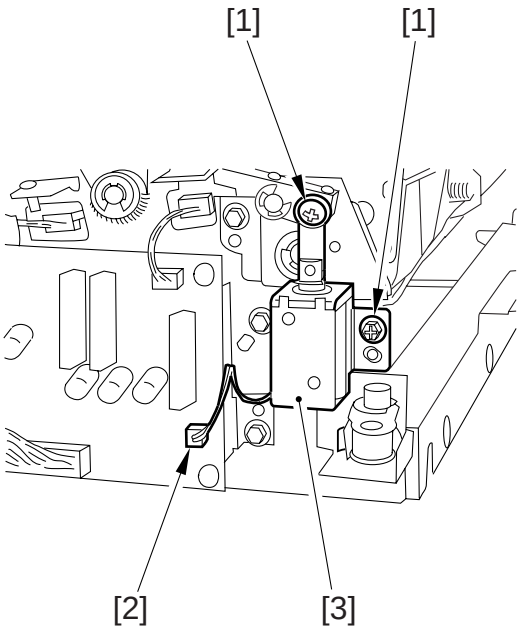


Figure 7-F803

4. Removing the Reversal Motor

1) Remove the front cover of the duplexing unit.
2) Disconnect the two connectors [1] , and remove the four screws [2]; then, detach the reversal motor together with the motor support plate [3].

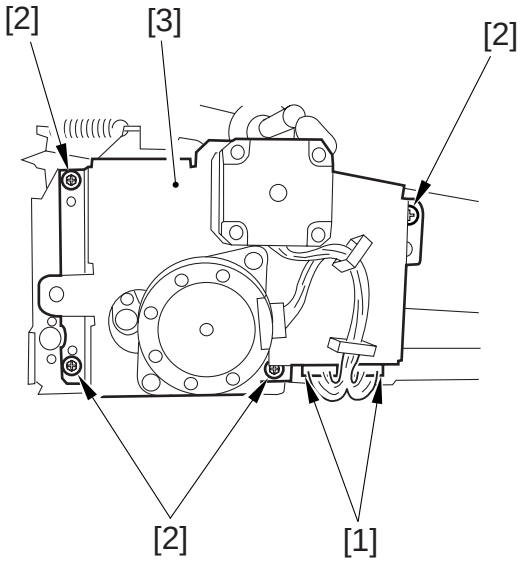


Figure 7-F804

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3) Remove the four screws [4], and detach the reversal motor [5].

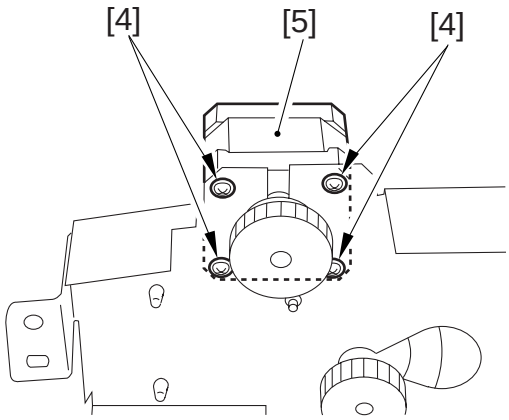


Figure 7-F805

5. Removing the Lower Feeder Motor

1) Remove the front cover of the duplexing unit.
2) Disconnect the connector [1], and remove the two screws [2]; then, detach the lower feeder motor [3].

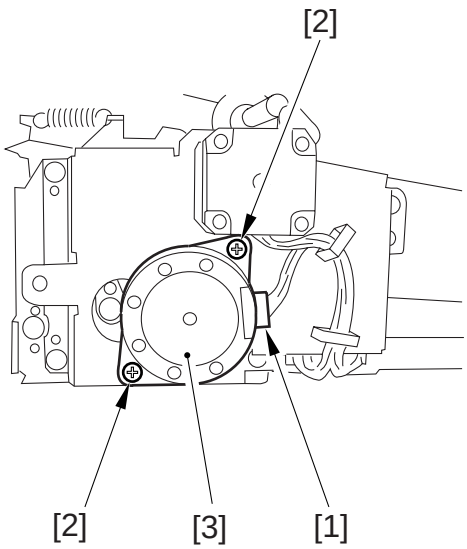


Figure 7-F806

6. Removing the Horizontal Registration Motor

1) Remove the duplexing unit from the copier.
2) Remove the two screws [1], and detach the upper cover [2].

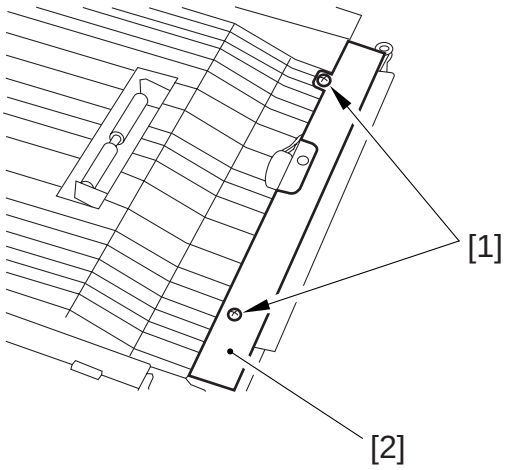


Figure 7-F807

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3) Disconnect the connector [3], and remove the screw [4]; then, detach the horizontal registration motor [5].

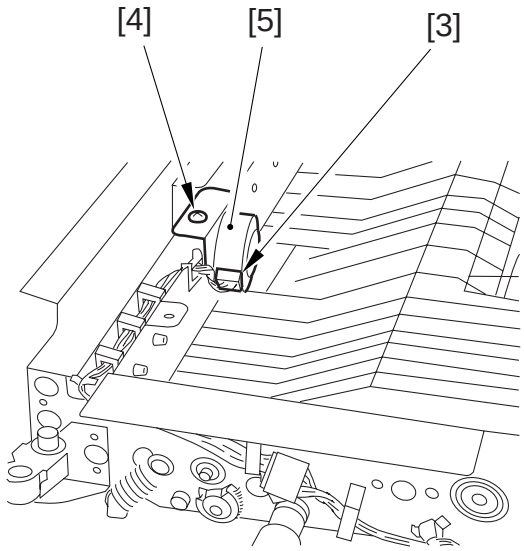


Figure 7-F808

7. Removing the Deck (left) Draw-Out Clutch/Lower Feeder Middle Clutch

1) Remove the duplexing unit from the copier.
2) Remove the front cover.
3) Disconnect the connector [1], and remove the grip ring [2]; the, detach each clutch [3].

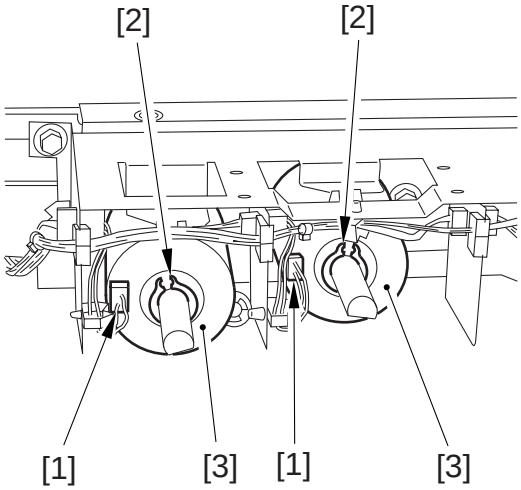


Figure 7-F809

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8. Removing the Lower Feeding Right Clutch

1) Remove the duplexing unit from the copier.
2) Remove the front cover.
3) Disconnect the connector [1], and remove the two screws [2]; then, detach the latch plate [3].

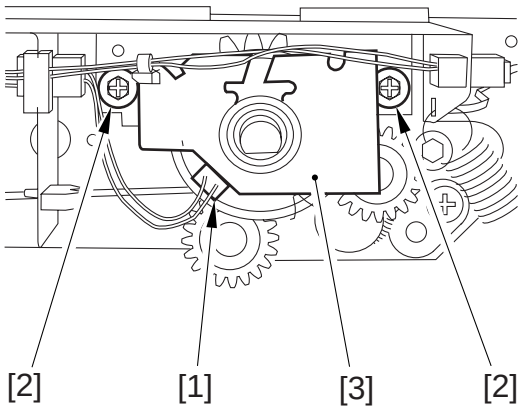


Figure 7-F810

4) Remove the bearing [4] and spacer [5]; then, detach the lower feeding right clutch [6].

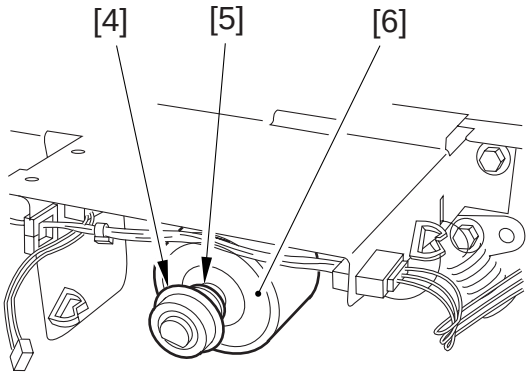


Figure 7-F811

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9. Removing the Duplexing Reversal Sensor

1) Remove the duplexing unit from the copier.
2) Remove the front cover.
3) Remove the motor support plate.
4) Remove the following from the front side of the reversing roller shaft [1]:
   - E-ring [2]
   - Gear [3] and parallel pin [4]
   - E-ring [5]
   - Spacer [6]
   - Bearing [7]

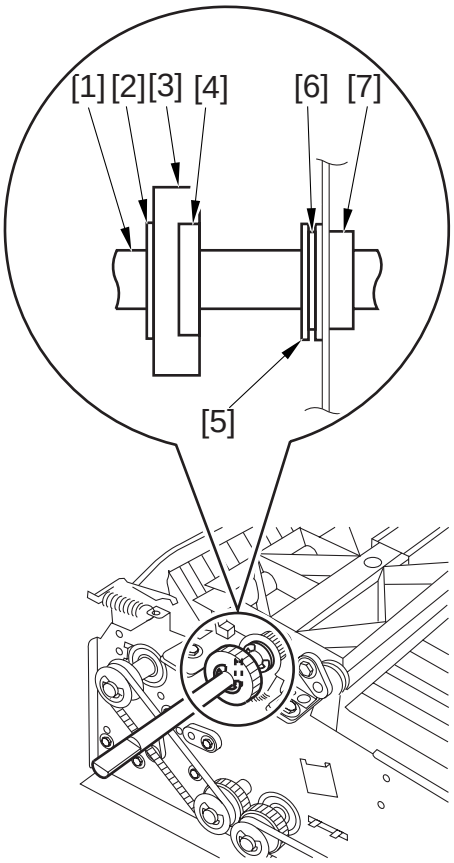


Figure 7-F812

5) Remove the following from the rear of the reversing roller shaft [1]:
   - E-ring [8]
   - Spacer [9]
   - Bearing [10]

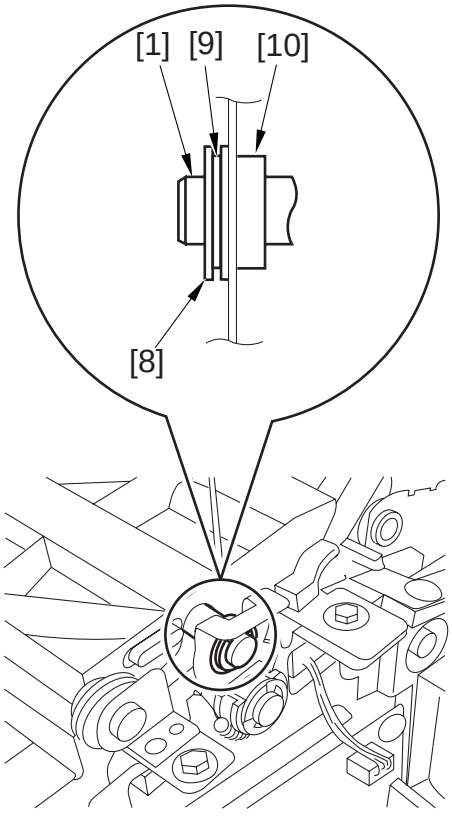


Figure 7-F813

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6) Release the front and rear springs [11] of the reversing guide.

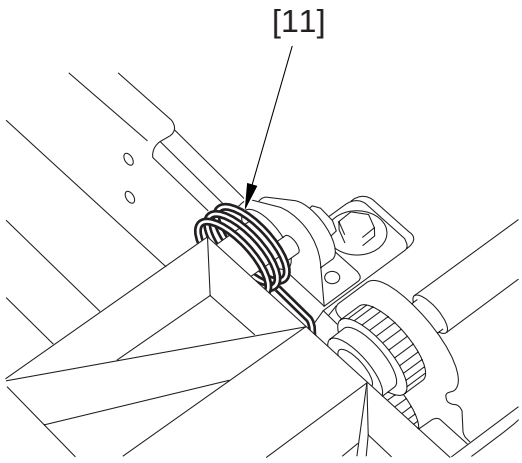


Figure 7-F814

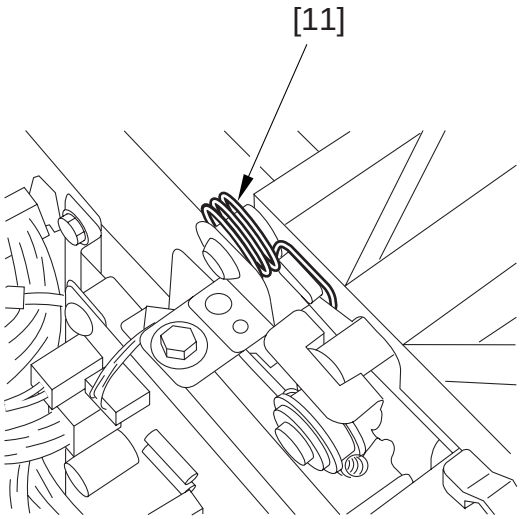


Figure 7-F815

7) While lifting the reversing guide, detach the reversing roller [12].

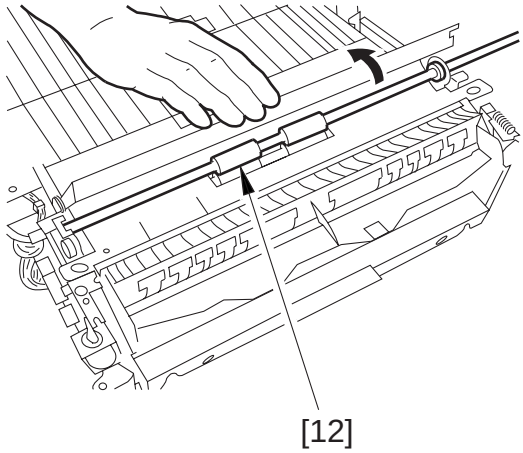


Figure 7-F816

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8) Disconnect the two connectors [13], and remove the four screws [14]; then, detach the reversing guide assembly [15].

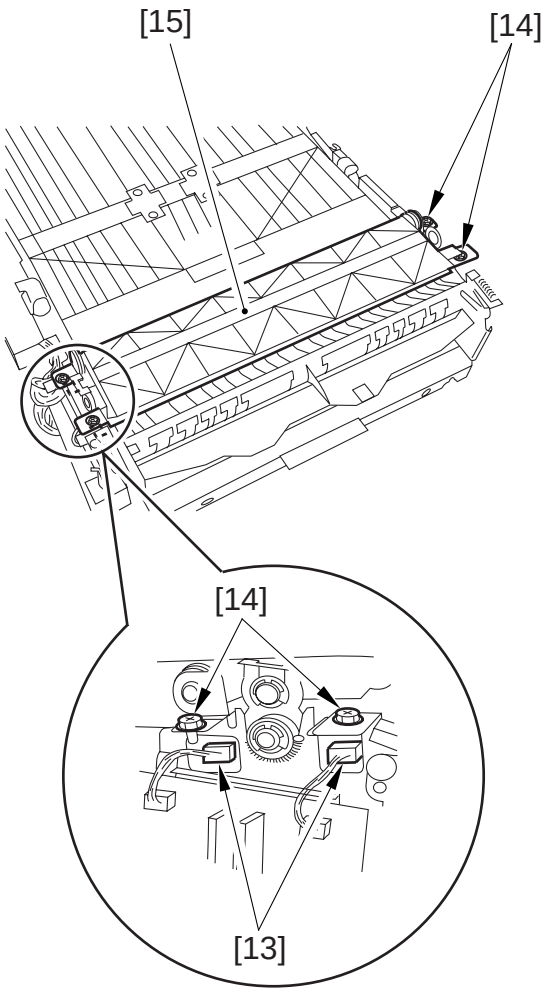


Figure 7-F817

9) Remove the two screws [16], and detach the duplexing reversal sensor [17].

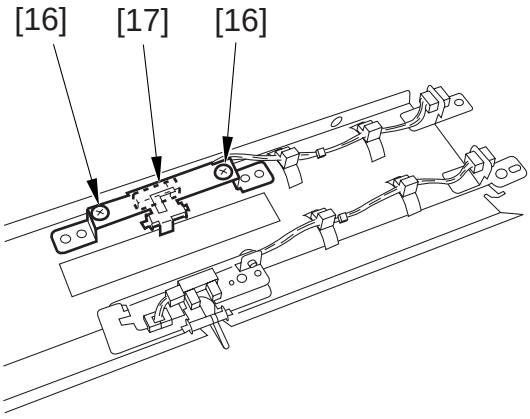


Figure 7-F818

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10. Removing the U-Turn Sensor

1) Perform steps 1) through 8) given for the removal of the duplexing reversal sensor.
2) Remove the screw [1], and detach the U-turn sensor [2].

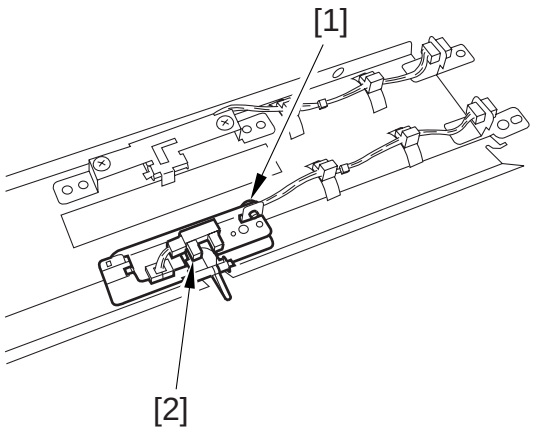


Figure 7-F819

11. Removing the Pre-Confluence Sensor

1) Disconnect the connector [1] from the bottom of the duplexing unit; then, remove the screw [2], and detach the pre-confluence sensor [3].

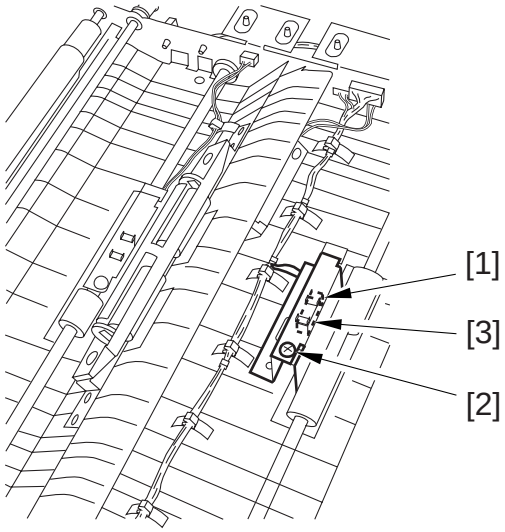


Figure 7-F820

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12. Removing the Post-Confluence Sensor

1) Remove the two screws [1] from the bottom of the duplexing unit; then, detach the left deck feeding roller assembly [2].

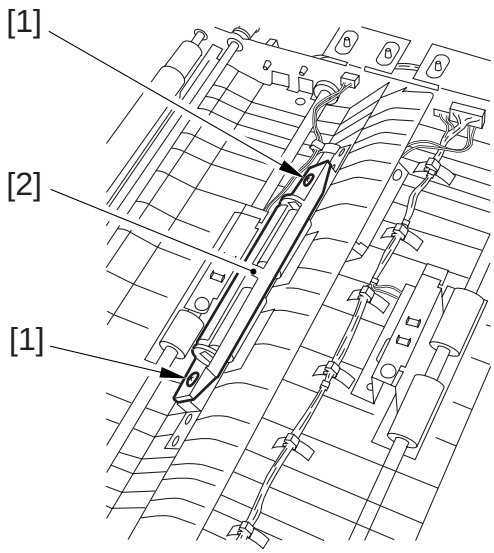


Figure 7-F821

2) Disconnect the connector [3]; then, remove the screw [4], and detach the post-confluence sensor [5].

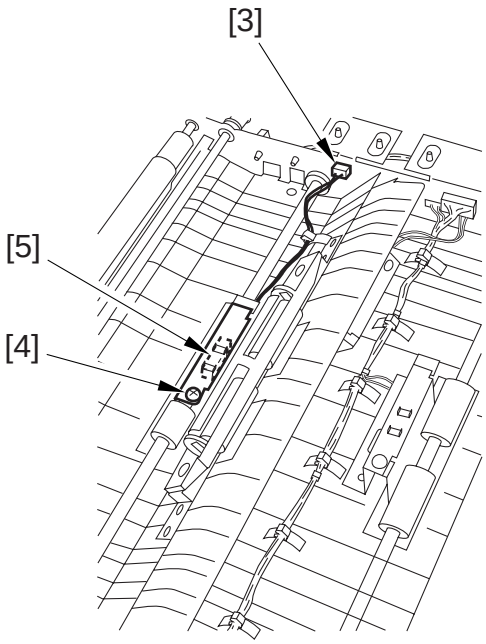


Figure 7-F822

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13. Removing the Front Deck (lifter) Draw-Out Sensor

1) Disconnect the connector [1] from the bottom of the duplexing unit; then, remove the screw [2], and detach the front deck (left) feed sensor [3].

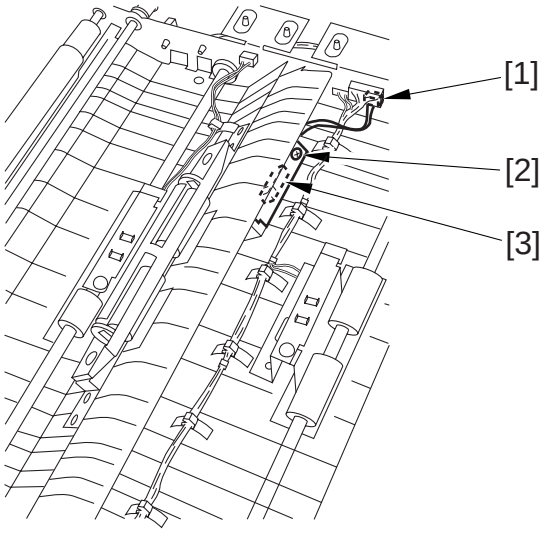


Figure 7-F823

14. Removing the Horizontal Registration Sensor

1) Remove the duplexing unit from the copier.
2) Remove the front cover.
3) Disconnect the connector [1], and remove the three screws [2].

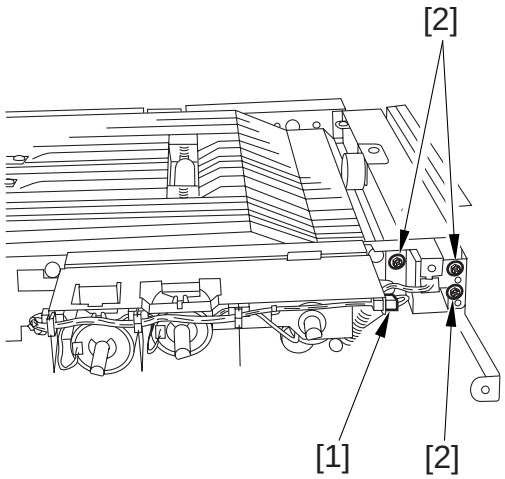


Figure 7-F824

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4) Remove the screw [3], and detach the duplexing unit right fixing assembly [4]; then, remove the two screws [5] at the rear, and detach the right grip plate [6].

Caution:
When mounting the right grip plate, be sure that the boss on the grip plate is in the hole of the side plate.

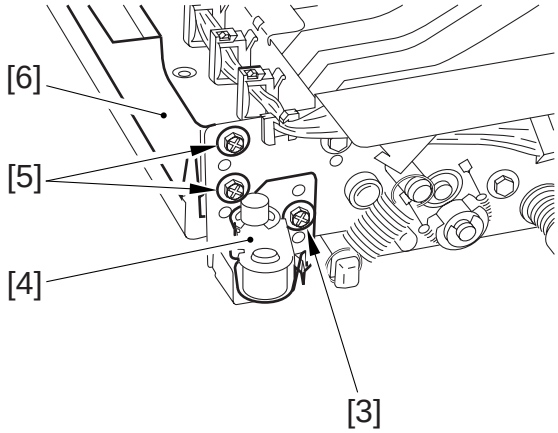


Figure 7-F825

5) Remove the screw [7], and detach the horizontal registration sensor [8].

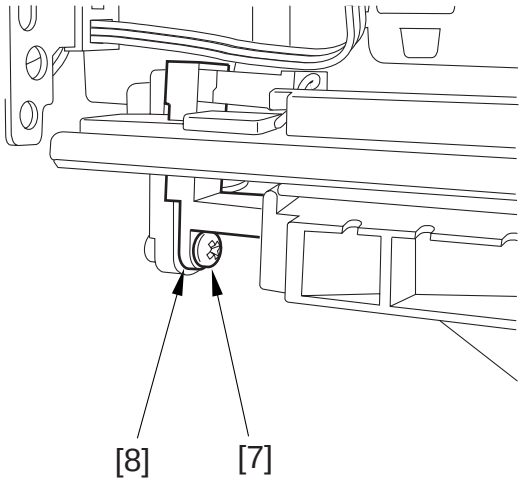


Figure 7-F826

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CHAPTER 8

FIXING SYSTEM

This chapter provides descriptions on the copier's fixing operations, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

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I . OPERATIONS

A. Outline

Table 8-101 shows the major functions of the fixing system.

Item	Functions
Fixing method	Heating roller (fixing roller + pressure roller)
Fixing heater	Main heater: used mainly for temperature control during PRINT Sub heater: used mainly for temperature control during STBY
Control temperature	200˚C (during STBY)
Temperature detection	[1] Main Thermistor for temperature control, error detection [2] Sub Thermistor for error detection [3] Thermal Switch for error detection
Control	[1] Down sequence control [2] Temperature control by mode •Transparency mode •Thick paper mode
Cleaning method	Cleaning belt roller (driven by a solenoid and one-way clutch)
Error detection	[1] Temperature control error detection by a thermistor [2] Overheating detection by a thermal switch
Others	[1] Fixing inlet guide drive control about 1 mm (top/down) [2] Thermistor reciprocating control 12 mm [3] Upper separation claw reciprocating control 3 mm [4] Fixing roller bias control +600 V

Table 8-101

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Figures 8-101 and -102 show the major components of the fixing system.

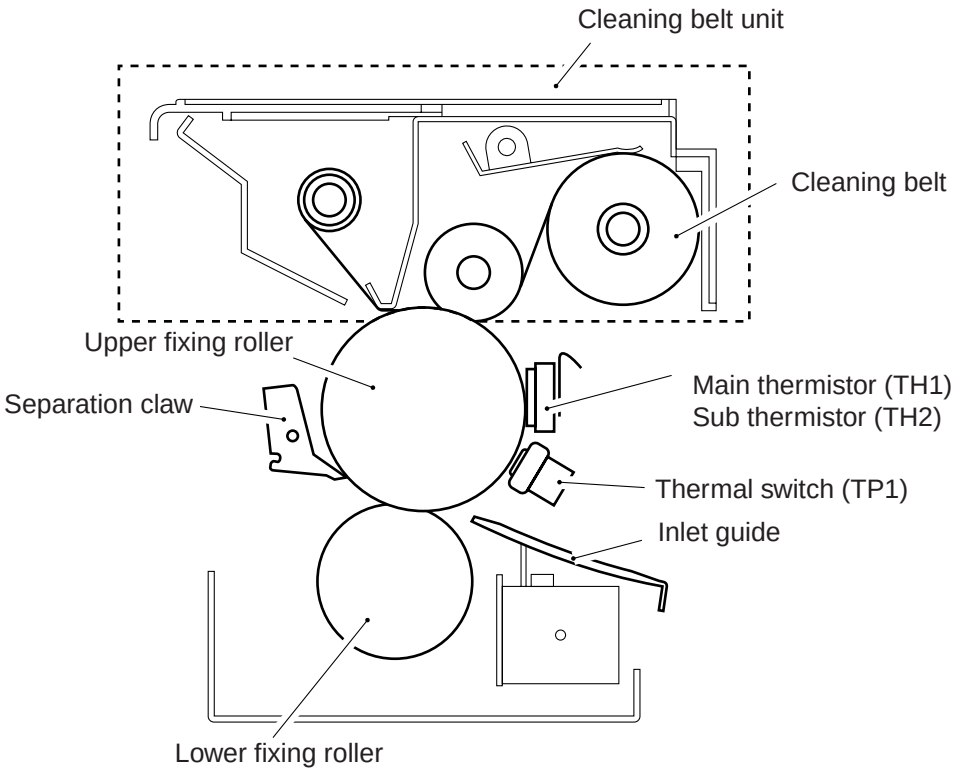


Figure 8-101 Cross Section

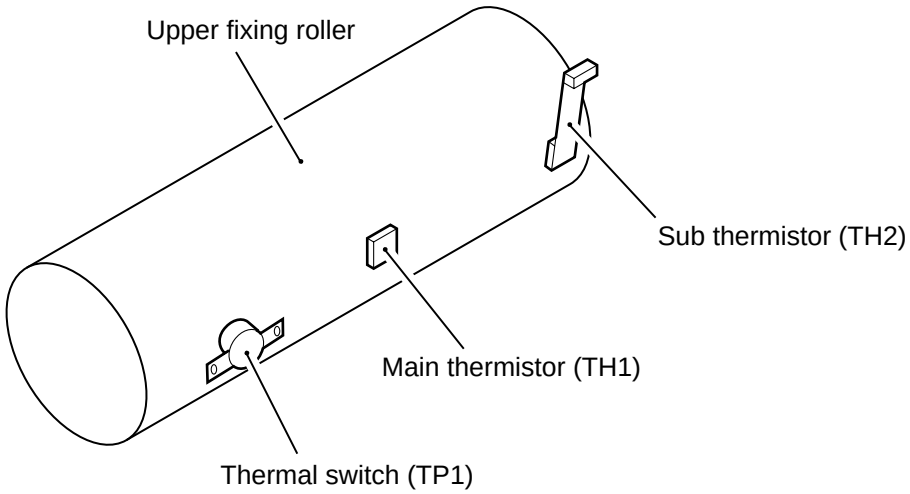


Figure 8-102 External View

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Parts	Notation	Description
Upper fixing roller		Heating roller, 50 mm dia.
Lower fixing roller		Pressure roller, 38 mm dia.
Fixing motor	M3	DC motor, 22 W
Main heater	H1	Used mainly for temperature control during PRINT (850 W for 20A model; 760 W for 15A model)
Sub heater	H2	Used mainly for temperature control during STBY (365 W for 20A model; 400 W for 15A model)
Main thermistor	TH1	Temperature control, error detection
Sub thermistor	TH2	Error detection
Thermal switch	TP1	Designed for an operating temperature of 223˚C
Cleaning belt		• Driven by the cleaning belt drive solenoid (SL2) • Turns on twice for large-size paper (B4 or larger) Turns on once for small-size paper (smaller than B4)
Separation claw		Designed for a reciprocating distance of 3 mm
Inlet guide		Designed for up/down movement of 1.8 mm

Table 8-102 Components

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B. Basic Sequence of Operations (fixing system)

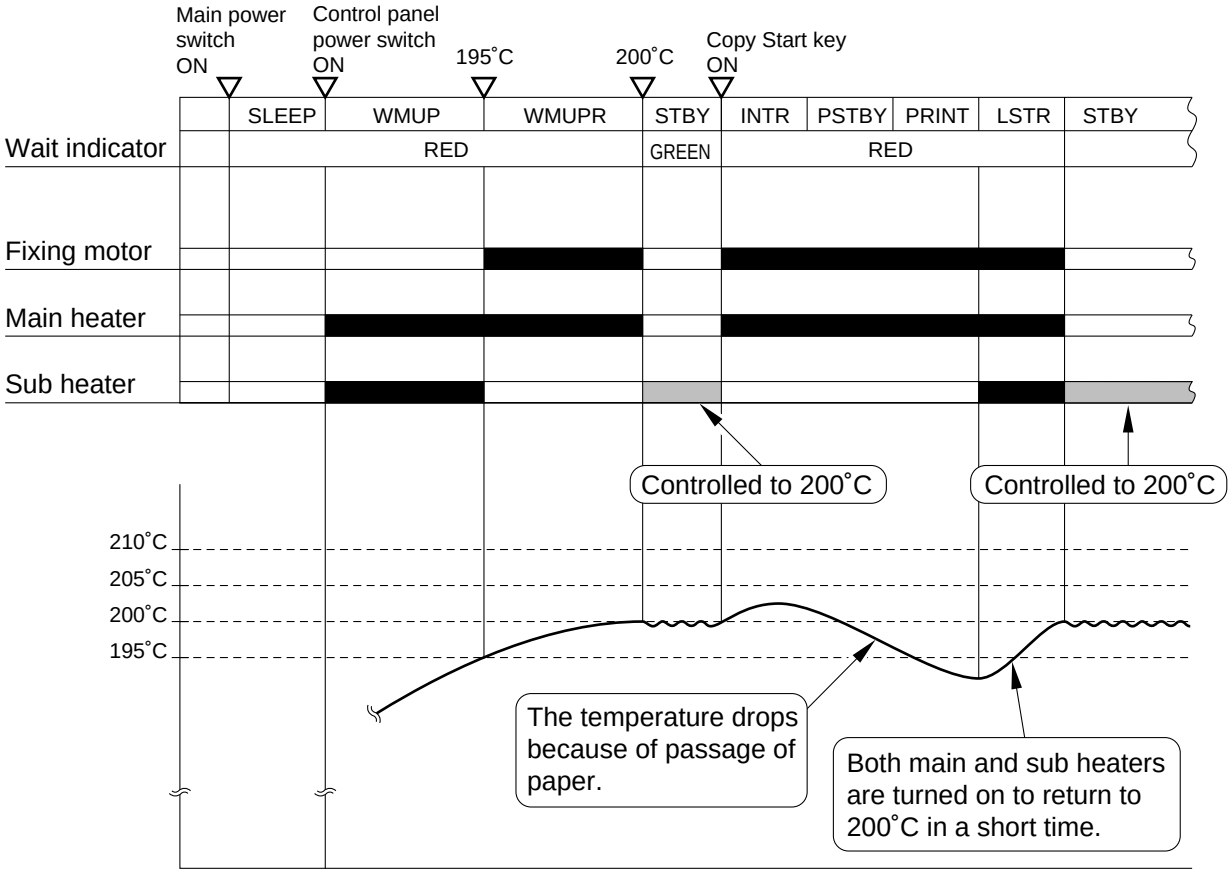


Figure 8-103 Basic Sequence of Operations

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II . FIXING DRIVE SYSTEM

A. Outline

The fixing drive system is controlled for the following:

[1] Drive of the fixing roller.
[2] Drive of the cleaning belt.
[3] Drive of the fixing inlet guide.
[4] Drive of the thermistor reciprocating mechanism.
[5] Drive of the upper separation claw reciprocating mechanism.

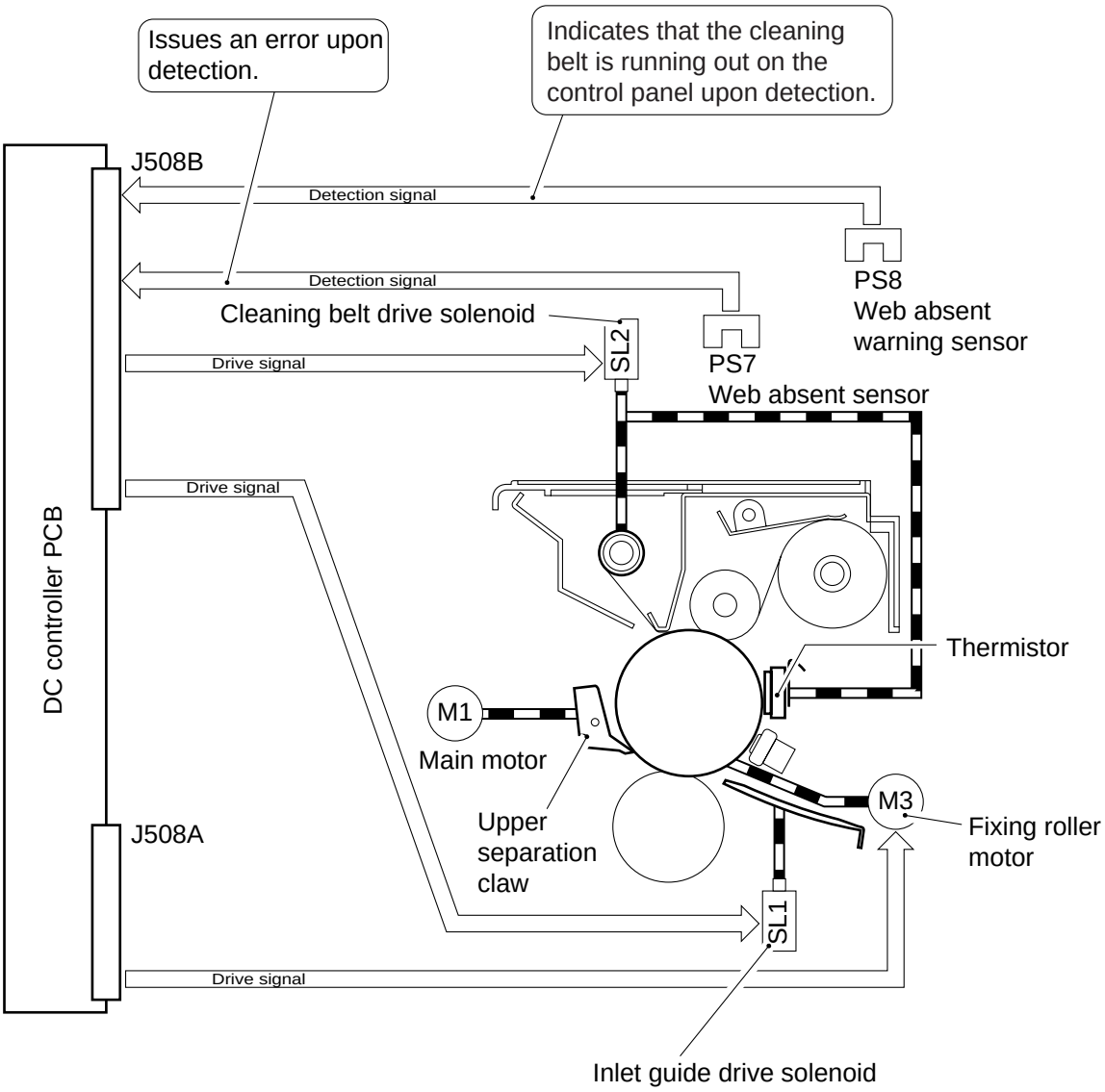


Figure 8-201 Construction of the Control System

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B. Controlling the Fixing Roller Drive Mechanism

Figure 8-202 shows the construction of the control system used to control the fixing roller drive mechanism.

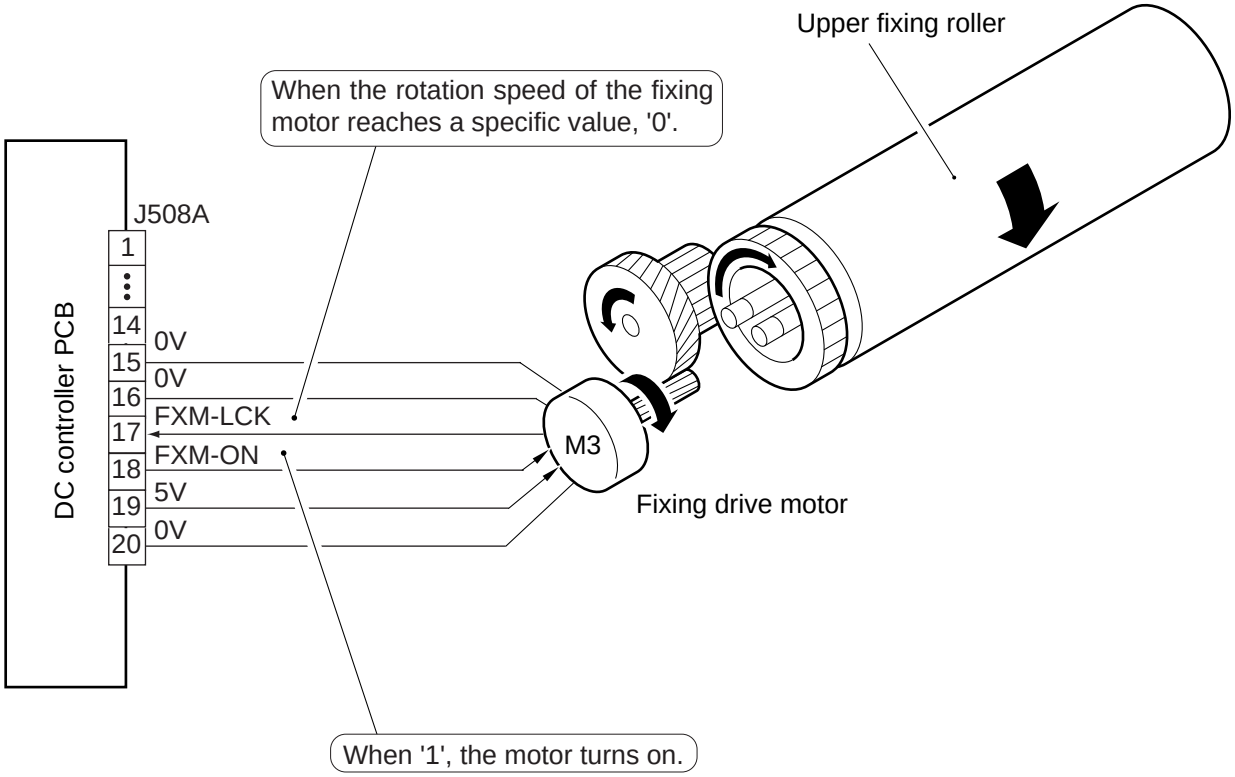


Figure 8-202 Construction of the Control System

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Related Error Code

E014 (fixing motor speed error)	FXM-LCK is '1' for more than 2 sec while the motor is rotating (i.e., FXM-ON=1).

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C. Controlling the Cleaning Belt Drive Mechanism

Figure 8-203 shows the construction of the control system used to control the cleaning belt drive mechanism.

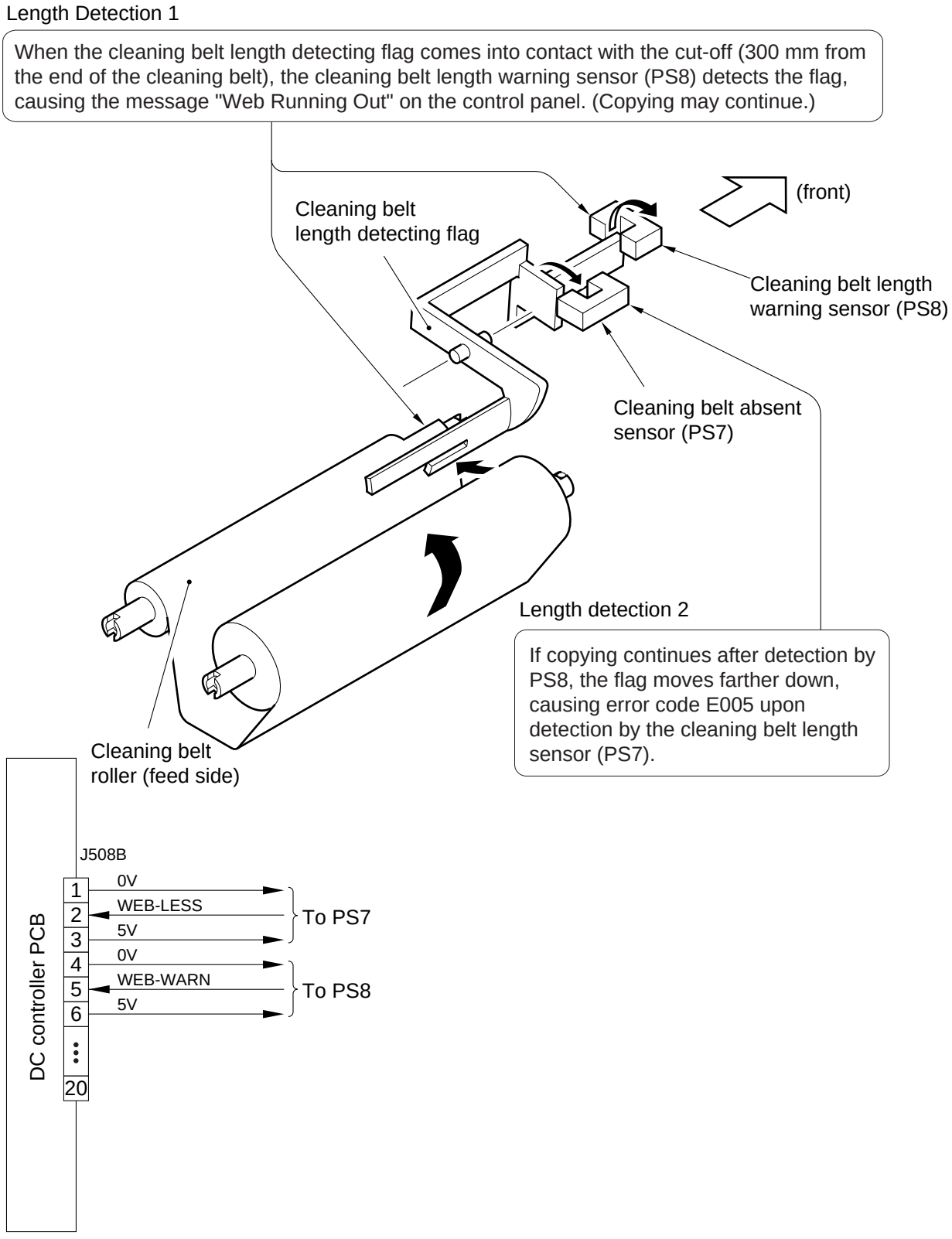

Length Detection 1
When the cleaning belt length detecting flag comes into contact with the cut-off (300 mm from the end of the cleaning belt), the cleaning belt length warning sensor (PS8) detects the flag, causing the message "Web Running Out" on the control panel. (Copying may continue.)
(front)
Cleaning belt length detecting flag
Cleaning belt length warning sensor (PS8)
Cleaning belt absent sensor (PS7)
Length detection 2
If copying continues after detection by PS8, the flag moves farther down, causing error code E005 upon detection by the cleaning belt length sensor (PS7).
Cleaning belt roller (feed side)
DC controller PCB
J508B
1
2
3
4
5
6
20
0V
WEB-LESS
5V
0V
WEB-WARN
5V
To PS7
To PS8

Figure 8-203 Construction of the Control System

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D. Controlling the Fixing Inlet Guide Drive Mechanism

🕮 Volume 2>Chapter 6>IV.5 "Adjusting the Height of the Fixing Assembly Inlet Guide"

Figure 8-204 shows the construction of the control system used to control the fixing inlet guide drive mechanism.

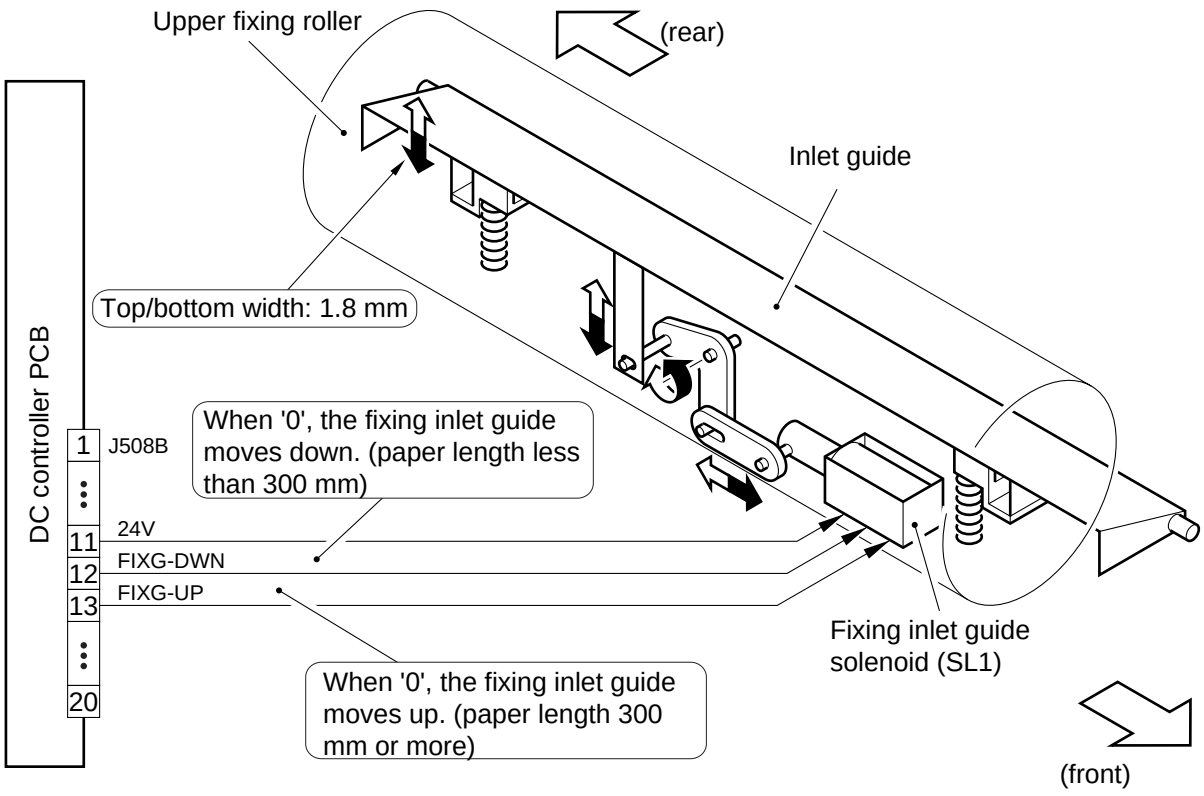


Figure 8-204 Construction of the Control System

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E. Controlling the Thermistor Reciprocating Mechanism

🕮 Volume 2>Chapter 6>IV.5. "Controlling the Reciprocating Mechanism of the Thermistor"

Figure 8-205 shows the control system used to control the reciprocating mechanism of the thermistor.

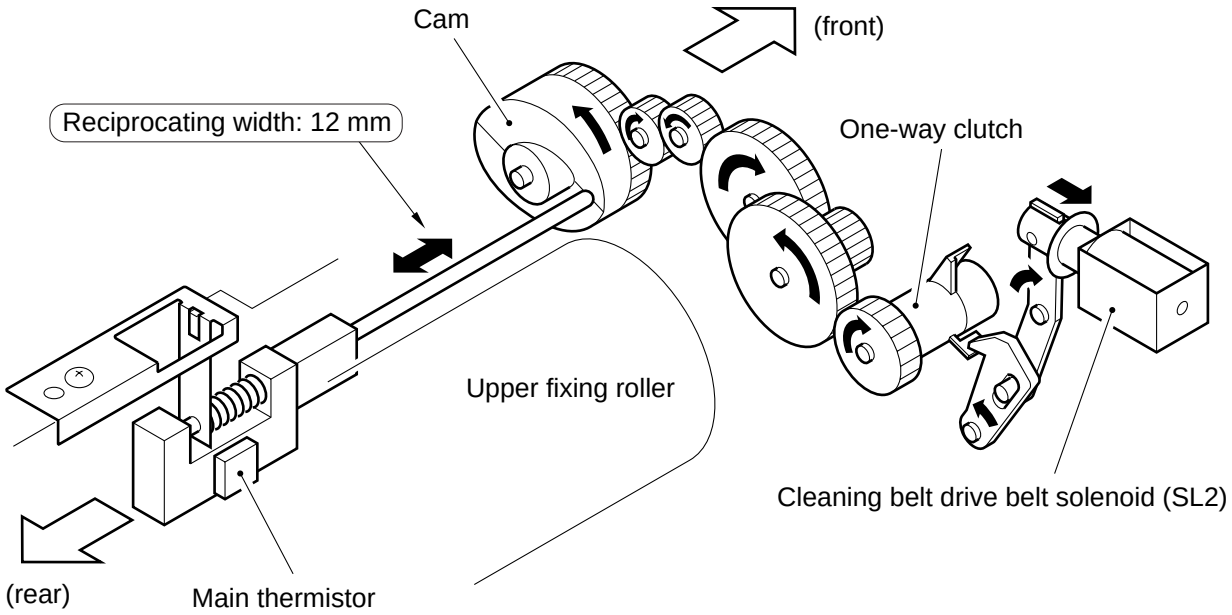


Figure 8-205 Construction of the Control System

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F. Controlling the Upper Separation Claw Reciprocating Mechanism

Figure 8-206 shows the control system used to control the reciprocating mechanism of the uppes separation claw.

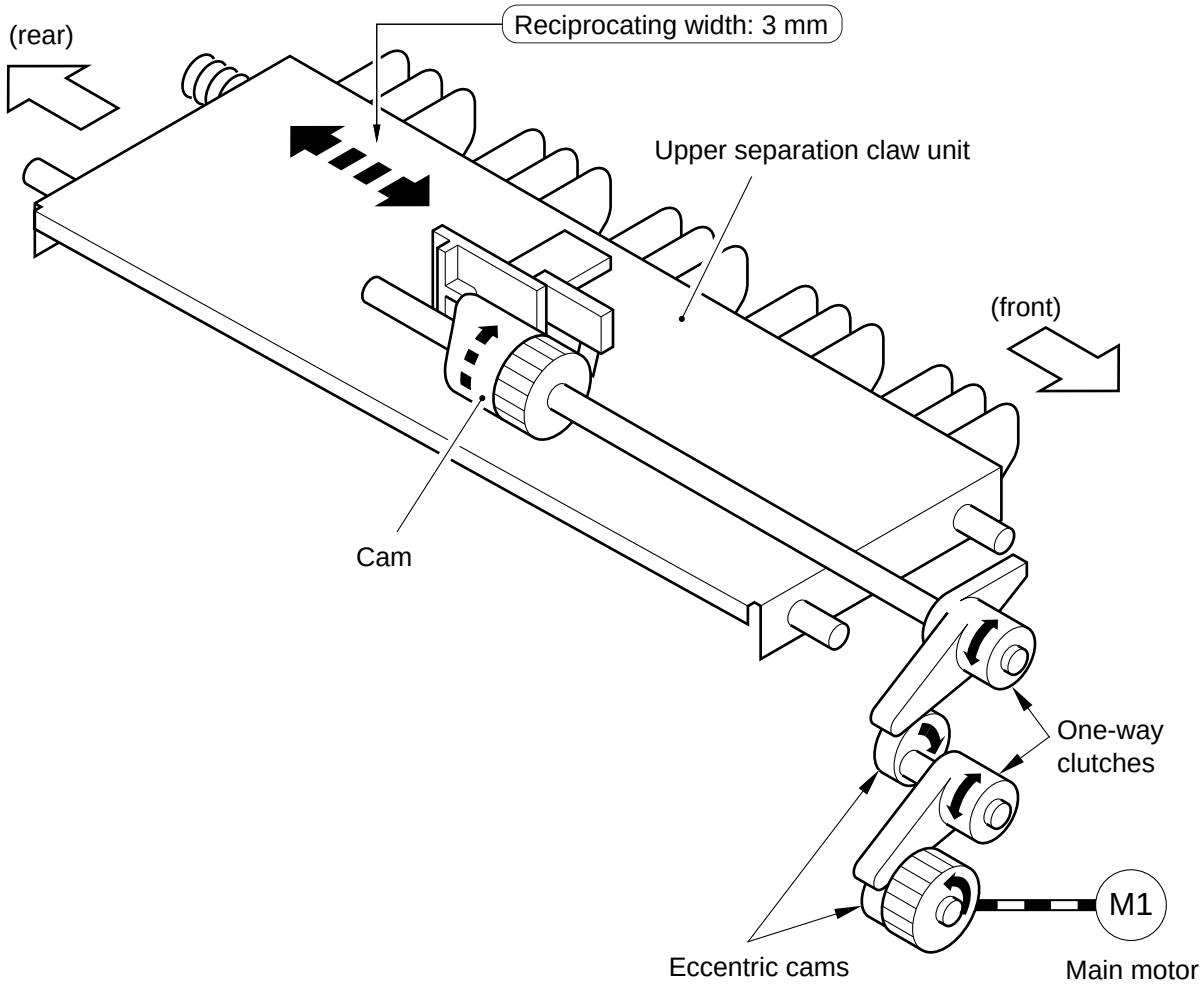


Figure 8-206 Construction of the Control System

III . CONTROLLING THE FIXING TEMPERATURE

A. Outline

The fixing temperature mechanism is controlled for the following:

[1] Down sequence
[2] Temperature by Mode
[3] Error detection

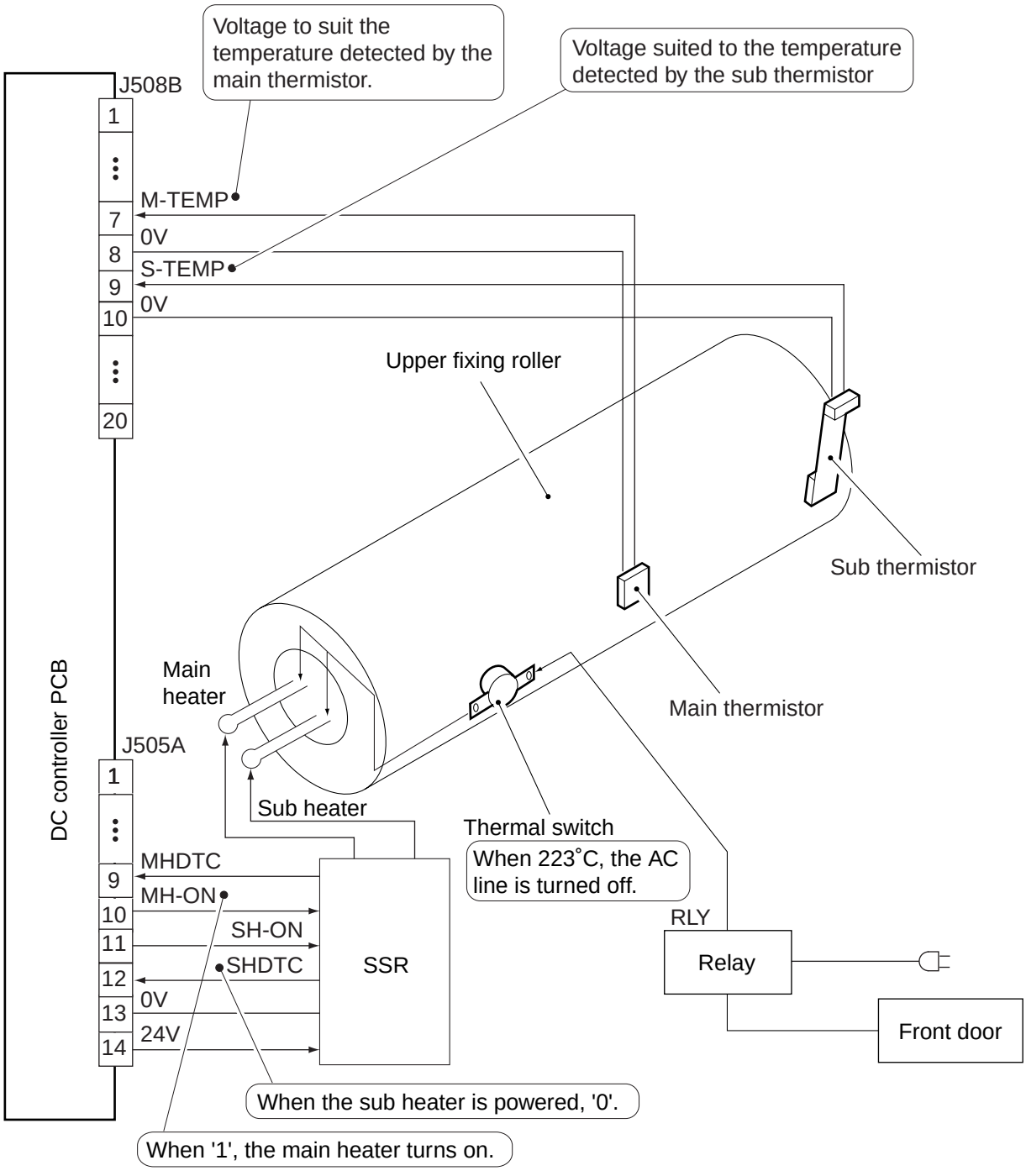


Figure 8-301 Construction of the Control System

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B. Down Sequence Control

Volume 2>Chapter 6>II.3. "Controlling the Roller Temperature"

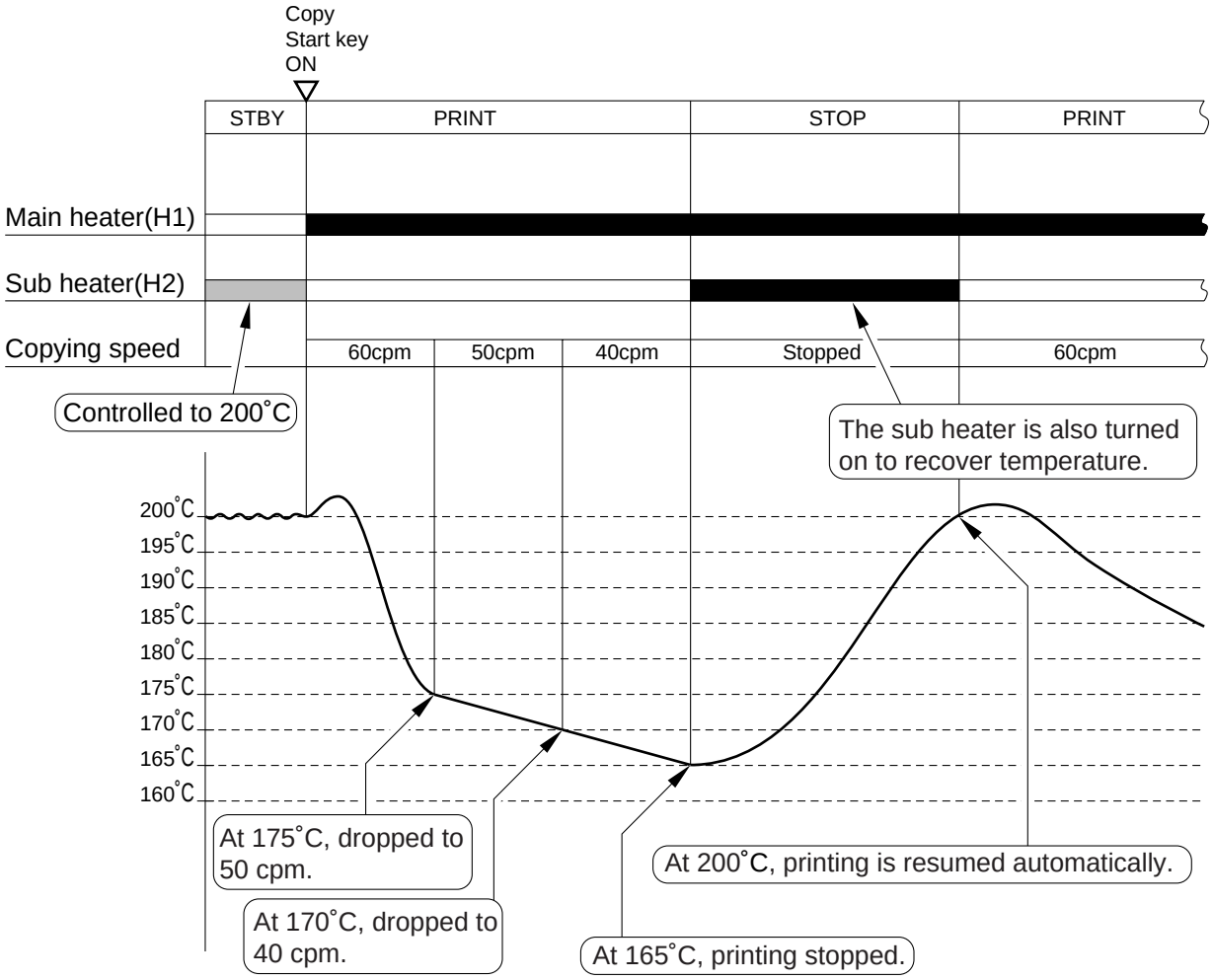


Figure 8-302 Down Sequence

Related Service Mode

COPIER>OPTION>BODY>FIX-TMP1
(down sequence state temperature)
Set a relatively high temperature for users who prefer priority on image quality, and a relatively low temperature for users who prefer priority on productivity.

Setting	50cpm	40cpm	Stop	Resume
0	170˚C →	165˚C →	160˚C →	175˚C
1	175˚C →	170˚C →	165˚C →	180˚C
2	180˚C →	175˚C →	170˚C →	185˚C
3	185˚C →	180˚C →	175˚C →	190˚C
4	190˚C →	185˚C →	180˚C →	195˚C
5	195˚C →	190˚C →	185˚C →	200˚C

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C. Controlling Temperature by Mode

The surface temperature of the fixing roller is controlled according to purpose for the following operating modes:

	Purpose	Correction
Transparency mode	To prevent wrapping of transparencies.	Lowers the control temperature.
Thick paper mode	To prevent drops in the surface temperature of the fixing roller.	Increases the down sequence rush temperature.
Power save mode	To reduce the power consumption.	Lowers the control temperature for STBY.

Table 8-301

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1. Transparency Mode

To prevent wrapping of a transparency around the fixing roller (or it would start to melt because of the heat from the fixing roller), the surface temperature of the fixing roller is lowered in transparency mode.

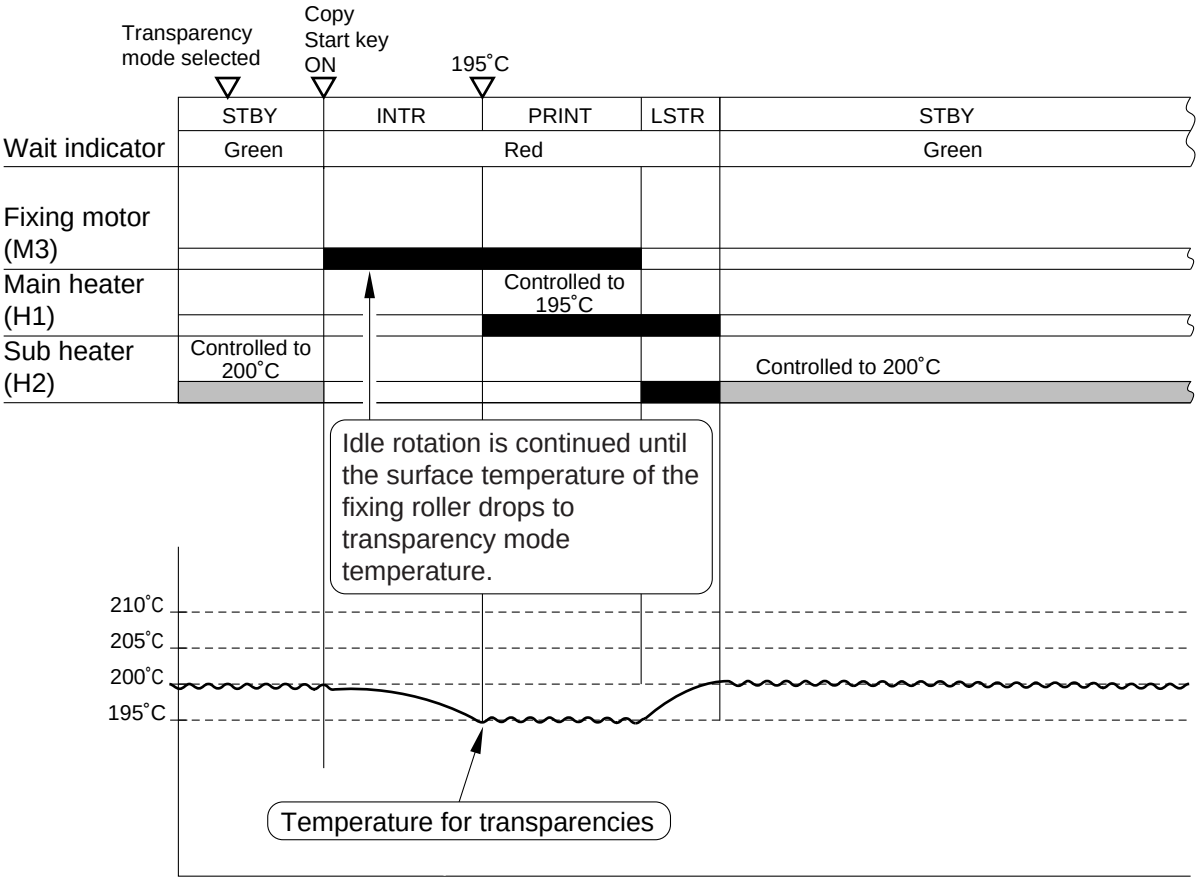


Figure 8-303 Sequence of Operations

Related Service Mode

COPIER>OPTION>BODY>OHP-TEMP (transparency mode temperature setting)	0: disables transparency mode temperature control. (normal temperature control only) 1: enables transparency mode temperature control at "normal control level -10˚C." 2: enables transparency mode temperature control at "normal control level -15˚C." 3: enables transparency mode temperature control at "normal control level -20˚C."

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2. Thick Paper Mode

To prevent drops in the surface temperature of the fixing roller against passage of paper, the down sequence rush temperature is increased. (This applies only when the source of paper is the cassette selected for thick paper in user mode.)

Related Service Mode

<table>
<tr>
<td>COPIER>OPTION>BODY>FIX-TEMP
(thick paper mode down sequence start temperature)</td>
<td>
<table>
<tr><th>Setting</th><th>50cpm</th><th>40cpm</th><th>Stop</th><th>Resume</th></tr>
<tr><td>0</td><td>170˚C → 165˚C → 160˚C → 175˚C</td></tr>
<tr><td>1</td><td>175˚C → 170˚C → 165˚C → 180˚C</td></tr>
<tr><td>2</td><td>180˚C → 175˚C → 170˚C → 185˚C</td></tr>
<tr><td>3</td><td>185˚C → 180˚C → 175˚C → 190˚C</td></tr>
<tr><td>4</td><td>190˚C → 185˚C → 180˚C → 195˚C</td></tr>
<tr><td>5</td><td>195˚C → 190˚C → 185˚C → 200˚C</td></tr>
</table>
</td>
</tr>
<tr>
<td>COPIER>OPTION>BODY>CPMKP-SW
(thick paper mode down sequence on/off)</td>
<td>0: disables down sequence of thick paper mode.
1: enables down sequence for thick paper mode (default)</td>
</tr>
</table>

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3. Power Save Mode

A press on the Save Power key on the control panel will lower the control temperature used during STBY to reduce power consumption.

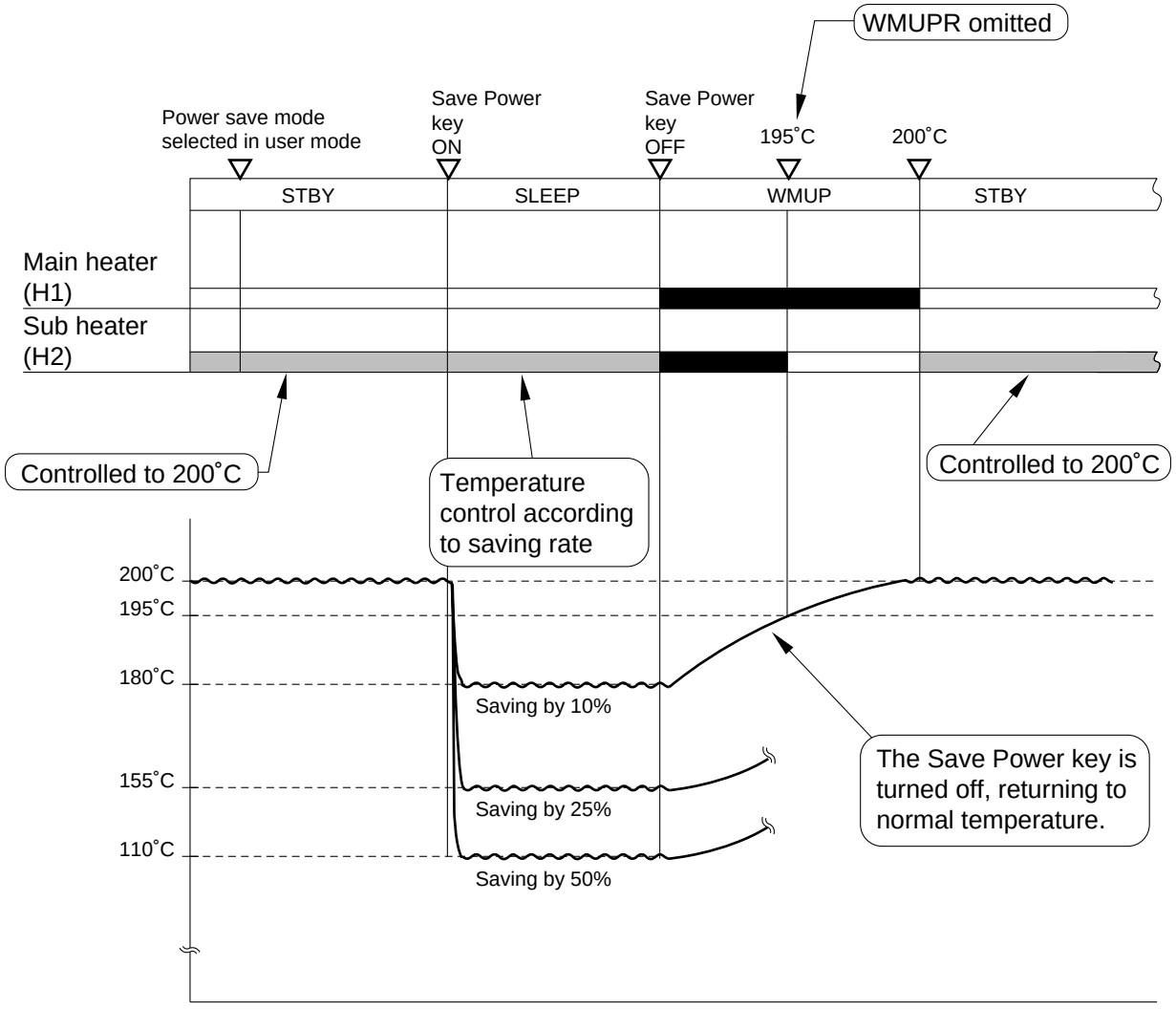


Figure 8-304 Sequence of Operations

D. Error Detection

The fixing temperature control mechanism is monitored for the following:

[1] Temperature control error by the main thermistor (TH1; see the sequence charts on the pages that follow)
[2] Sensor error by the sub thermistor (TH2; see the sequence charts on the pages that follow)
[3] Overheating error by the thermal switch (TP1)

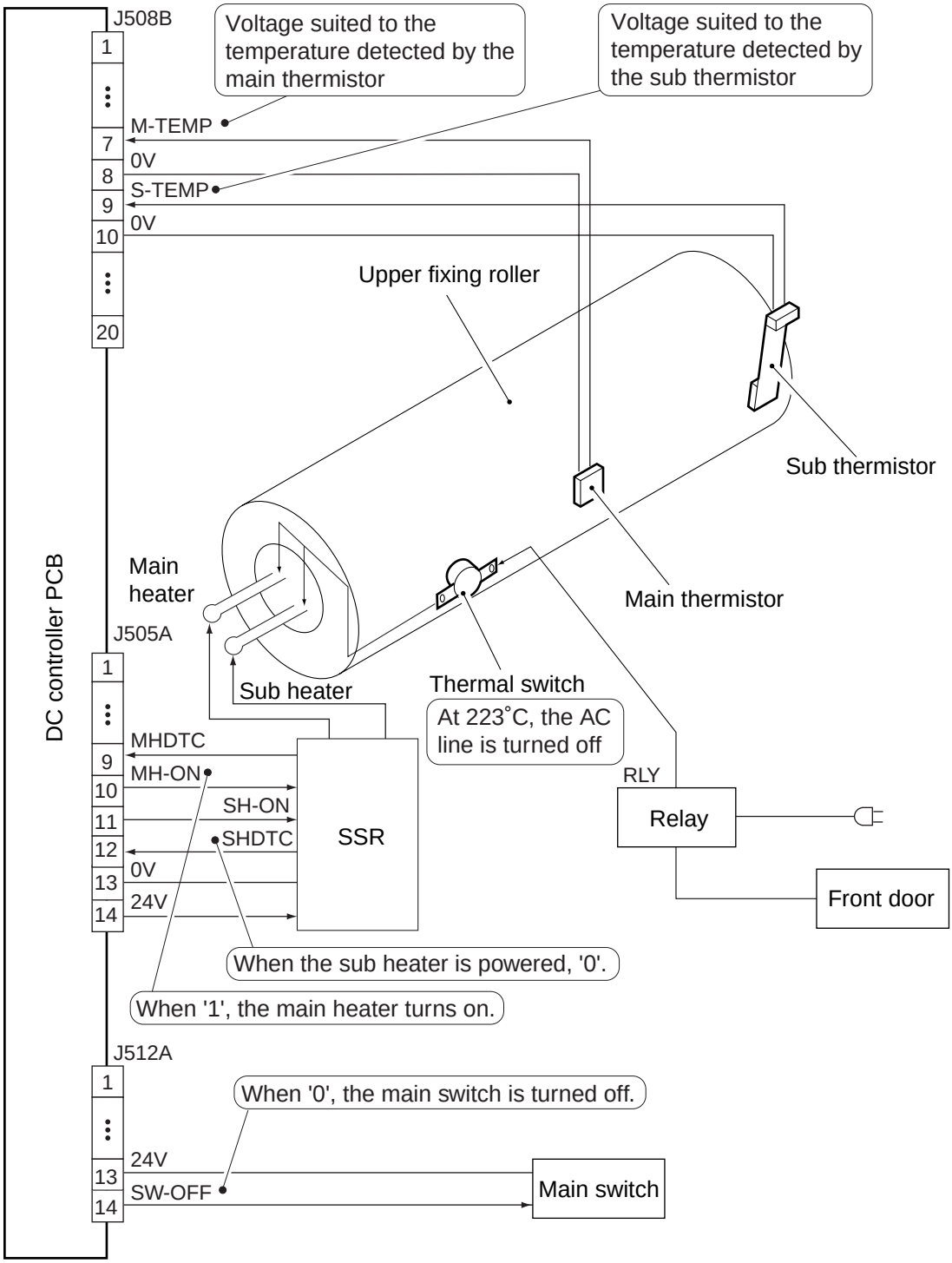


Figure 8-305 Construction of the Control System

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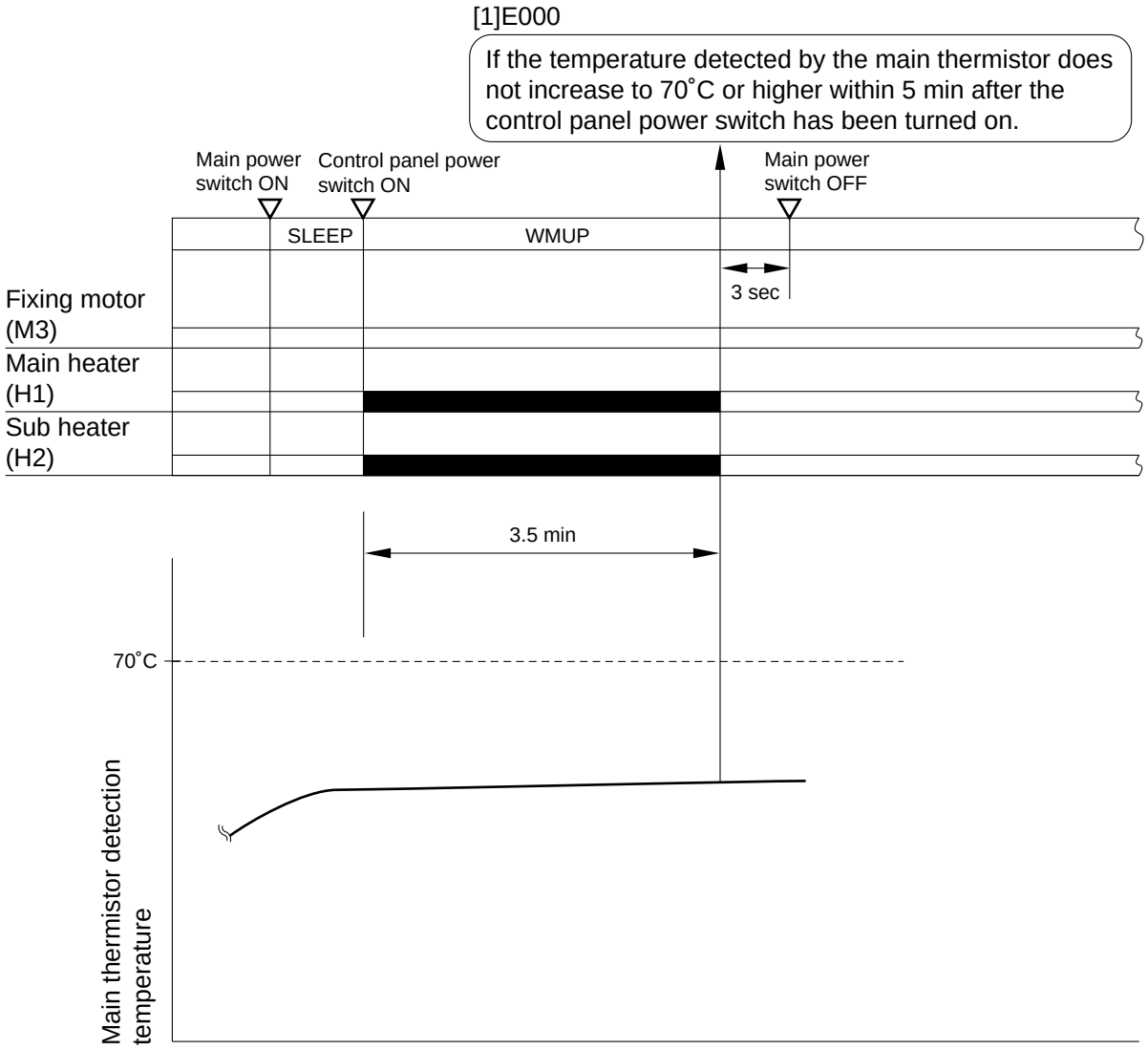

[1]E000
If the temperature detected by the main thermistor does not increase to 70˚C or higher within 5 min after the control panel power switch has been turned on.
Main power switch ON
Control panel power switch ON
Main power switch OFF
SLEEP
WMUP
3 sec
Fixing motor (M3)
Main heater (H1)
Sub heater (H2)
3.5 min
70˚C
Main thermistor detection temperature

Figure 8-306 Sequence of Operations (error detection)

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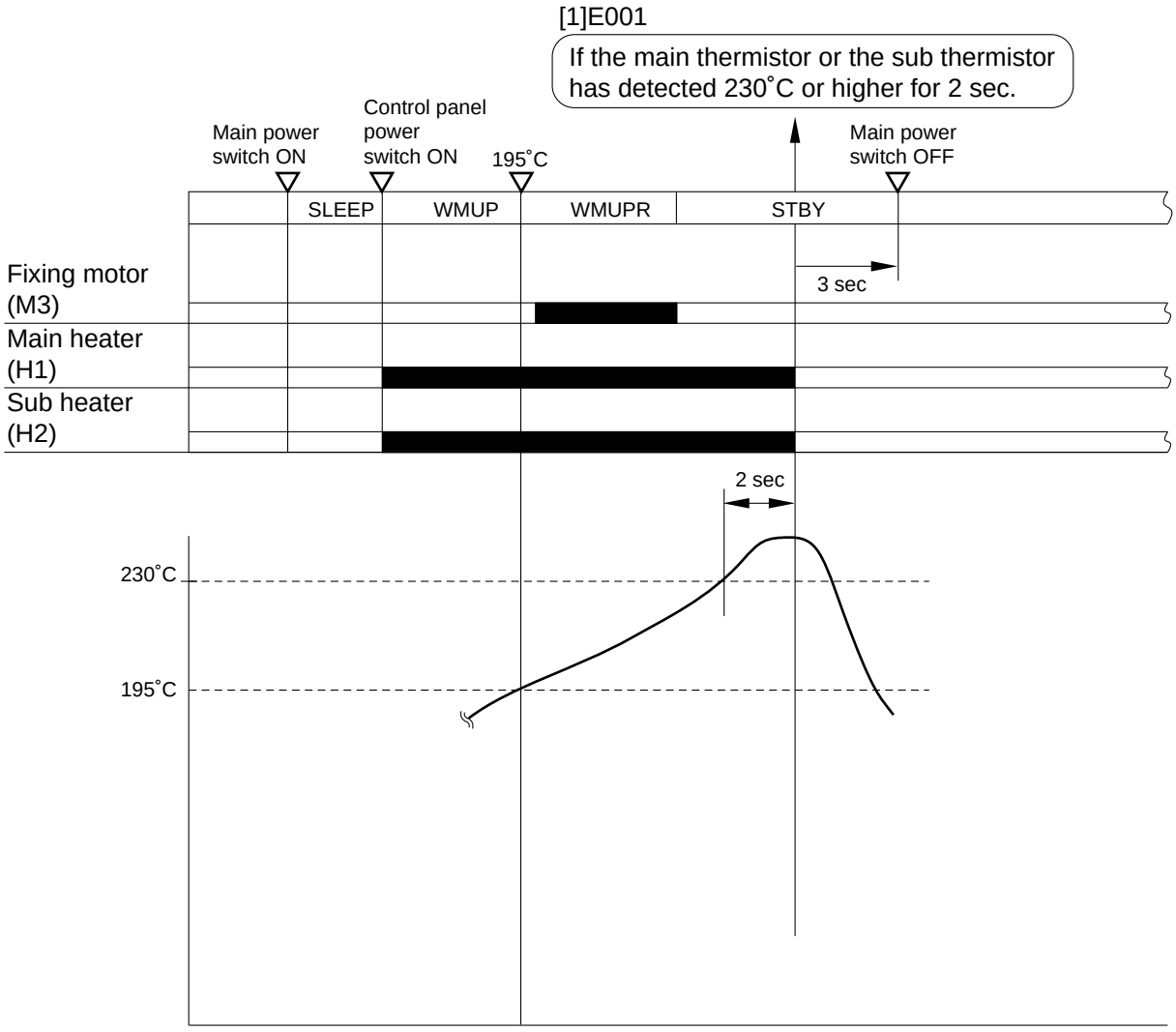


Figure 8-307 Sequence of Operations (error detection)

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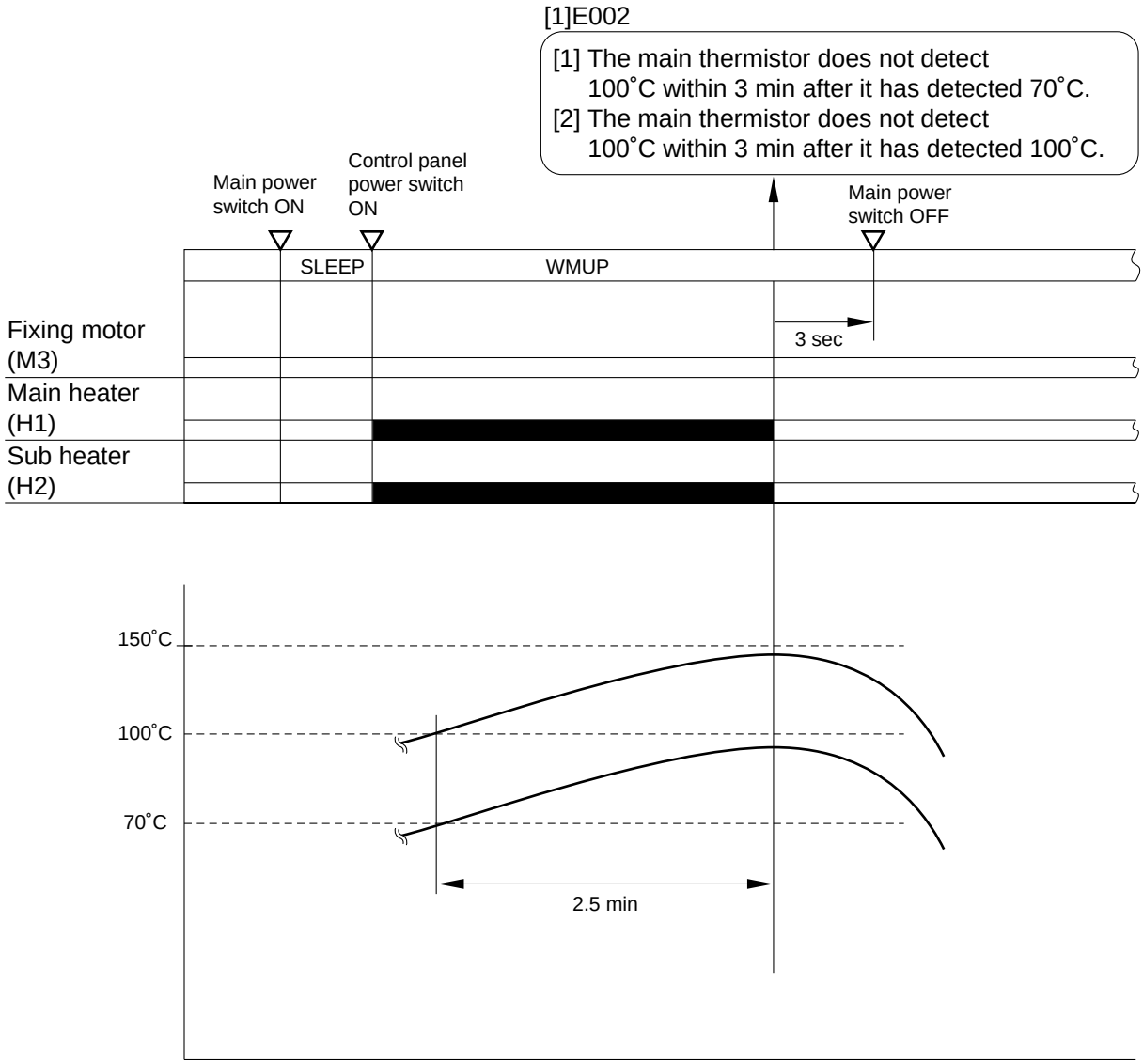

[1]E002
[1] The main thermistor does not detect 100˚C within 3 min after it has detected 70˚C.
[2] The main thermistor does not detect 100˚C within 3 min after it has detected 100˚C.
Main power switch ON
Control panel power switch ON
Main power switch OFF
SLEEP
WMUP
3 sec
Fixing motor (M3)
Main heater (H1)
Sub heater (H2)
150˚C
100˚C
70˚C
2.5 min

Figure 8-308 Sequence of Operations (error detection)

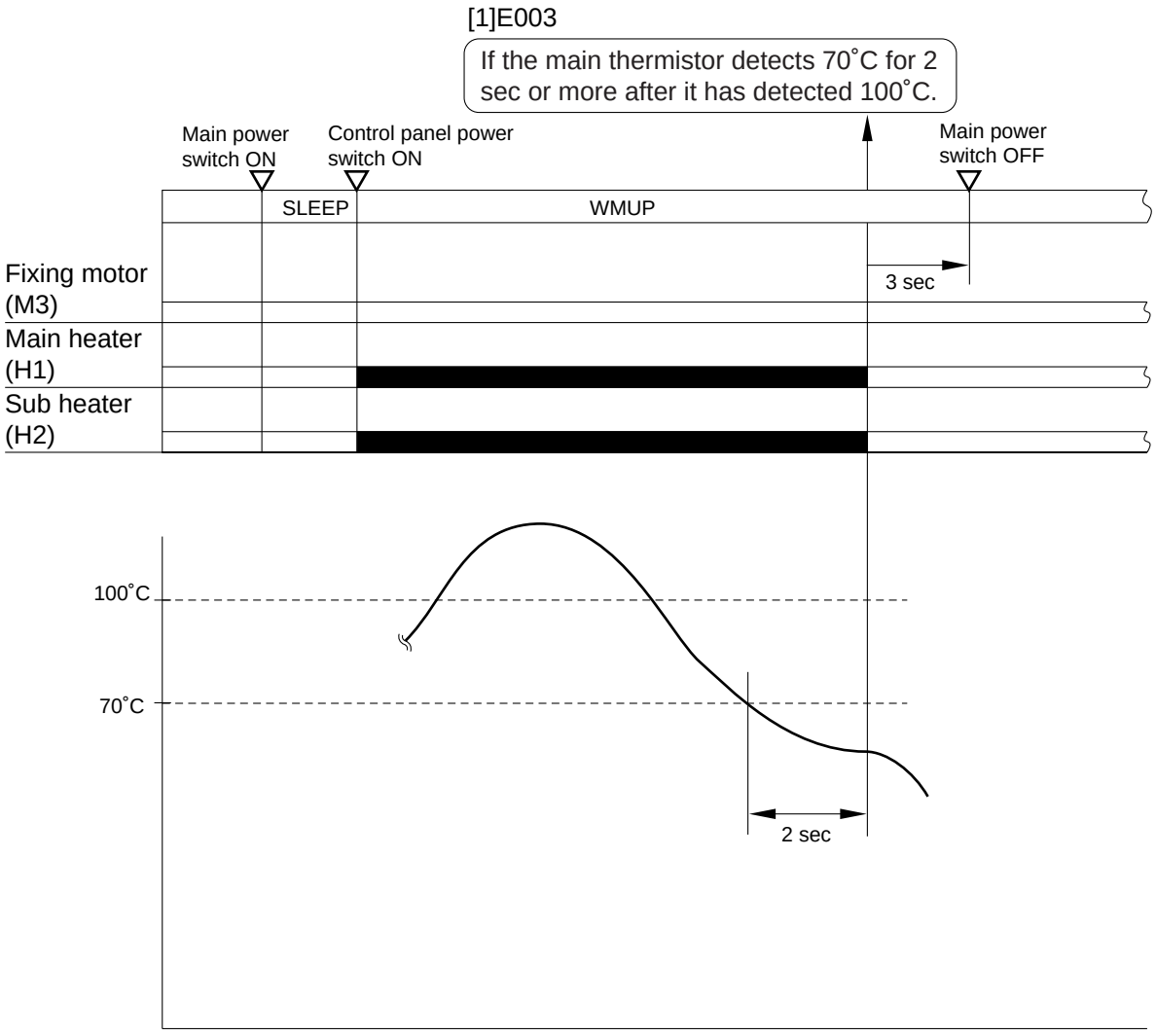


Figure 8-309 Sequence of Operations (error detection)

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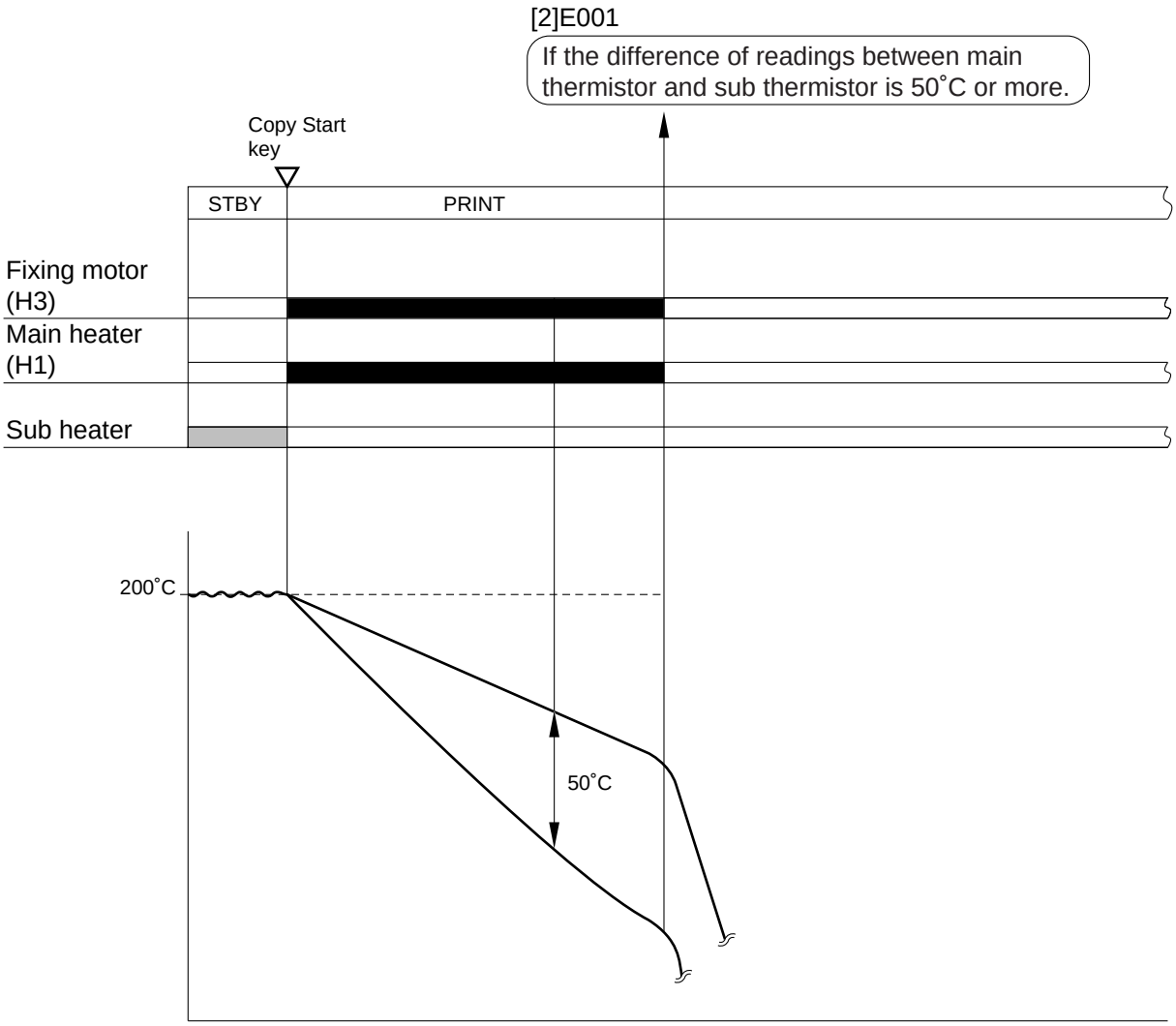


Figure 8-310 Sequence of Operations (error detection)

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IV . CONTROLLING THE FIXING ROLLER BIAS

A. Outline

The fixing roller bias is controlled for the following:
[1] Fixing roller bias constant voltage

Figure 8-401 shows the construction of the control system used to control the fixing roller bias.

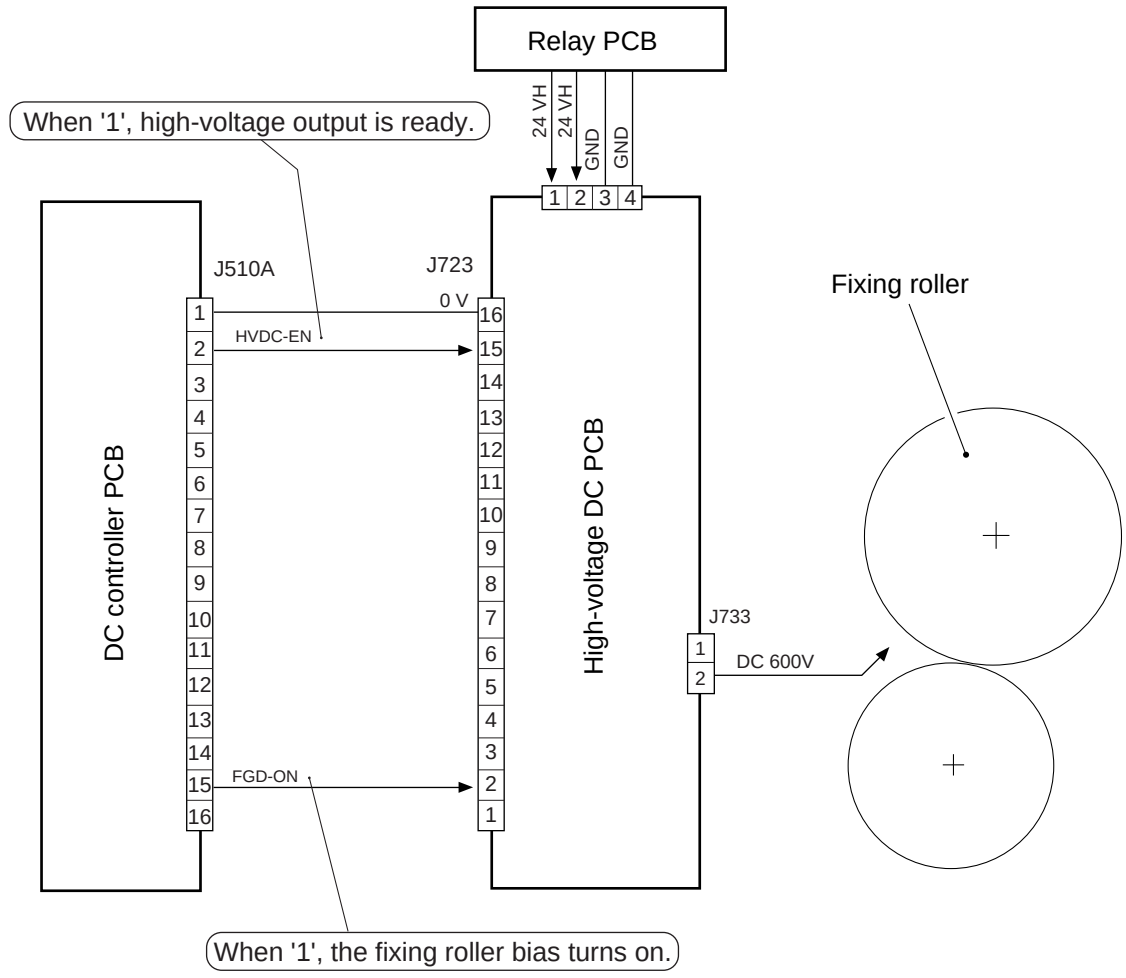


Figure 8-401 Construction of the Control System

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V . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. Fixing Assembly

1. Removing the Fixing Assembly

1) Slide the fixing/feeding unit halfway out the copier.
2) While pushing on the stopper [2] on both ends of the fixing/feeding unit rail [1], slide the fixing/feeding unit farther out.

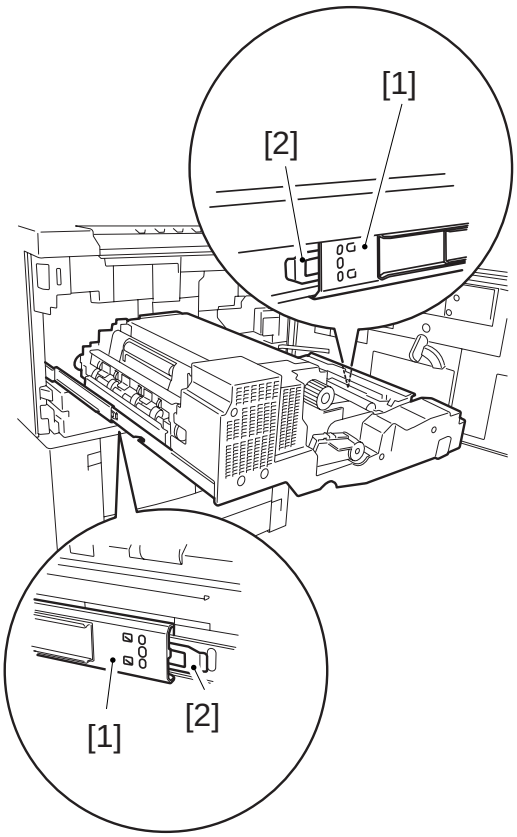


Figure 8-A501

3) While pushing the releasing lever link [3] found at the rear of the fixing/feeding unit, shift up the fixing/feeding unit releasing lever [4], and remove the screw [5] to detach.

Caution:
When setting the fixing/feeding unit in the copier, be sure to mount the releasing lever, and shift the lever while pressing the releasing lever link.

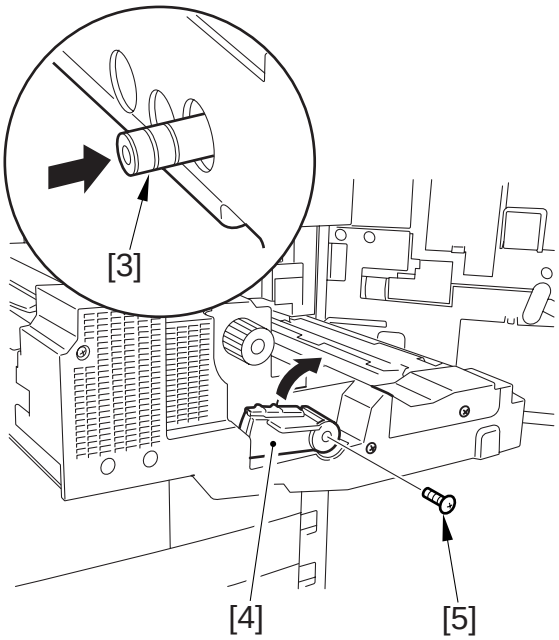


Figure 8-A502

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4) Remove the two screws [6], pre-transfer charging assembly cover [7], and fixing roller knob [8]; then, remove the two screws [9], and detach the fixing/feeding unit cover [10].

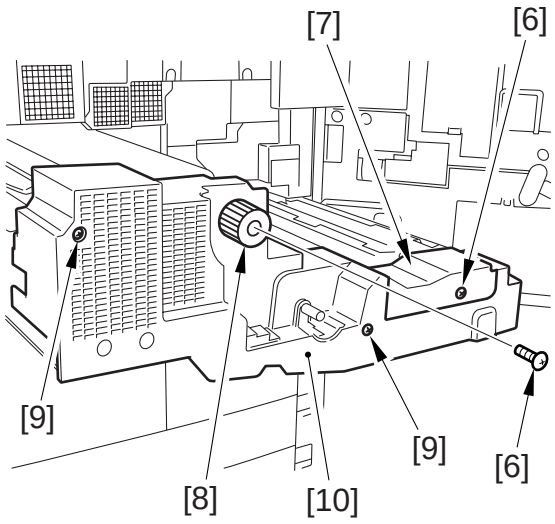


Figure 8-A503

5) Disconnect the four connectors [11], and remove the three screws [12]; then, detach the fixing motor [13].

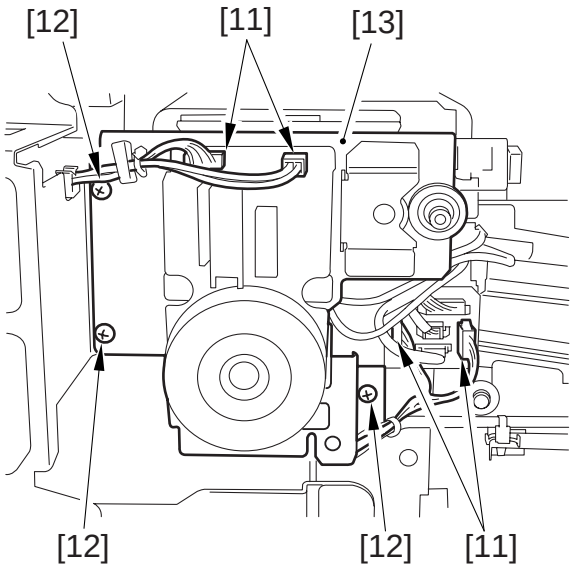


Figure 8-A504

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6) Open the fixing/delivery assembly, and remove the screw [14]; then, holding the front [16] and the rear [17] of the fixing assembly [15], detach the fixing assembly from the copier.

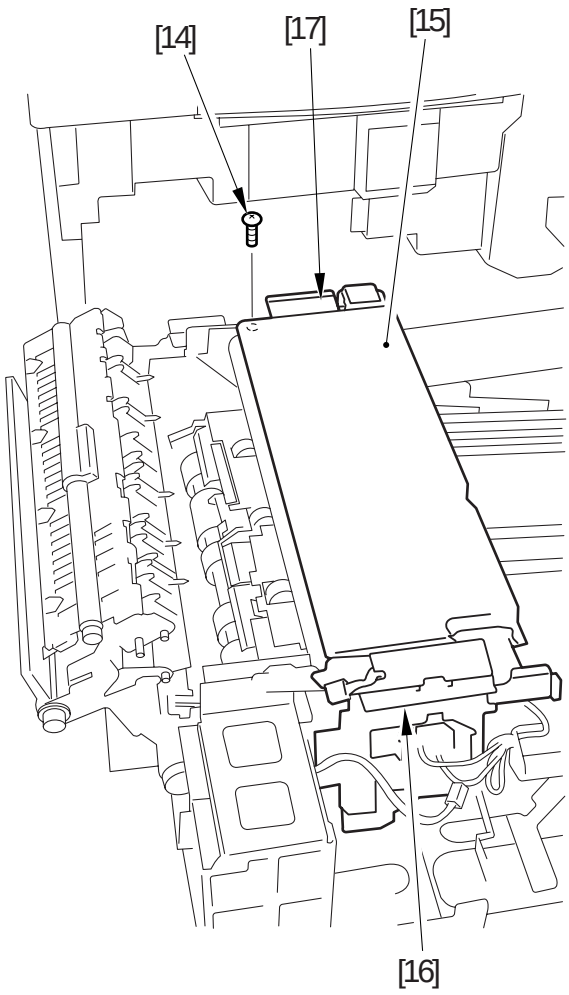


Figure 8-A505

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B. Fixing Roller Cleaning Assembly

1. Removing the Fixing Cleaning Belt

1) Slide the fixing/feeding unit halfway out; then, release the stoppers on both rails, and slide the unit farther out.
2) Remove the pre-transfer charging assembly cover, fixing feeding unit releasing lever, and fixing roller knob.
3) Remove the screw [1], and detach the fixing assembly upper cover [2].

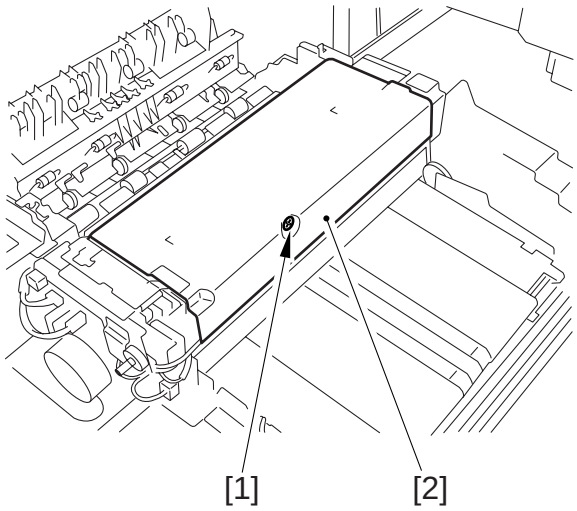


Figure 8-B501

4) Remove the two screws [3] used to secure the fixing cleaning belt assembly, and open the top of the fixing cleaning belt assembly upward.

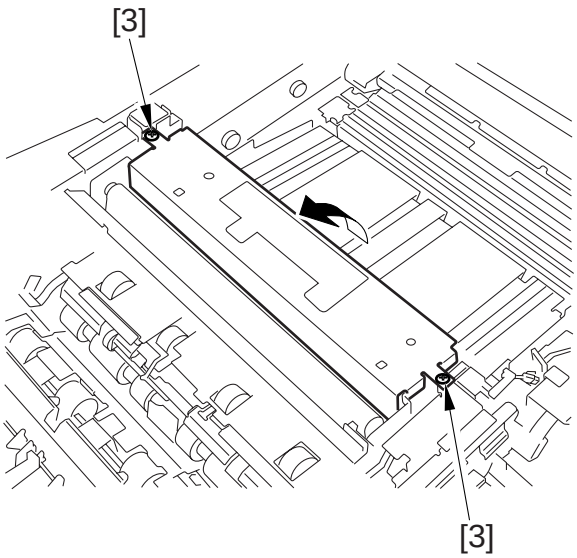


Figure 8-B502

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5) While pushing the cleaning belt feeding roller [4] and the take-up roller [5] toward the rear, detach the cleaning belt [6].

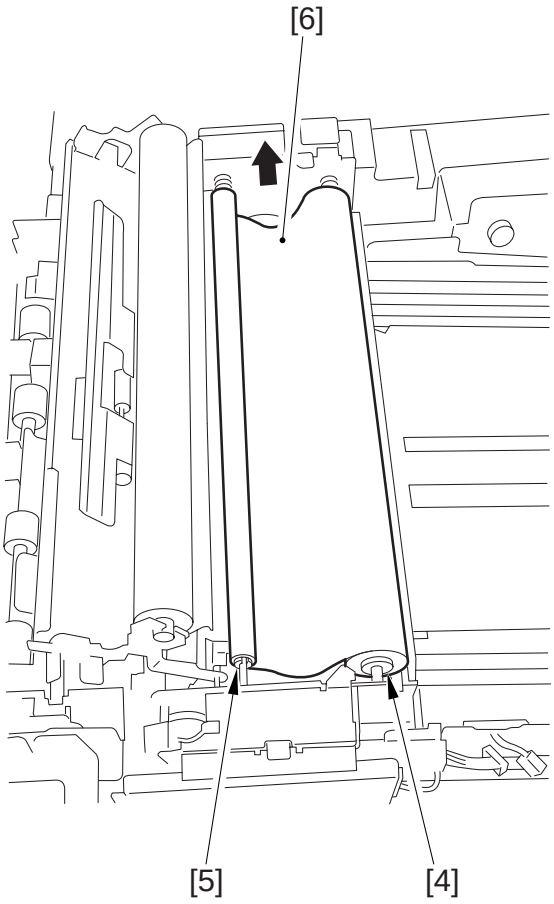


Figure 8-B503

Caution:
When cleaning the silicone oil pan, be sure to remove the silicone oil collecting in the oil pan [7] found under the cleaning belt feeding roller.

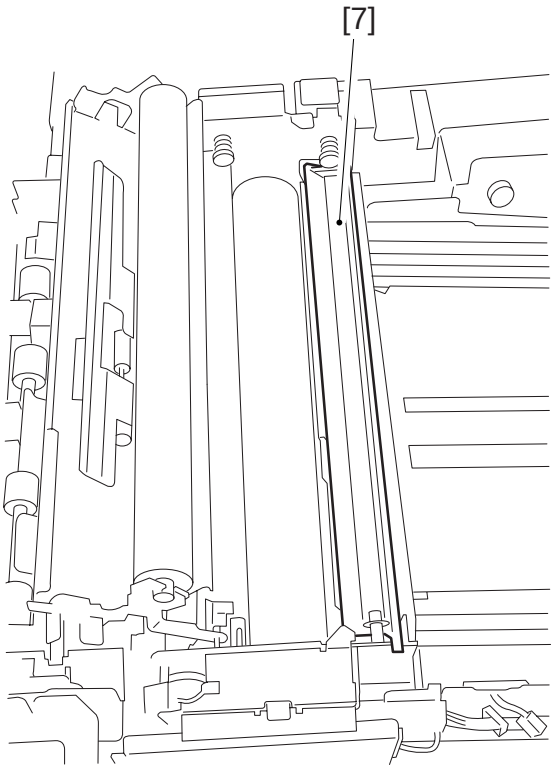


Figure 8-B504

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2. Mounting the Fixing Cleaning Belt

Mount the fixing cleaning belt by reversing the steps used to remove it.

1) Wind the cleaning belt [2] around the cleaning belt take-up roller [1] two to three times, and mount it so that the arm guide plate [3] at the front is on the outside of the take-up roller.
   At this time, check to make sure that the area of contact with the roller is impregnated with oil.

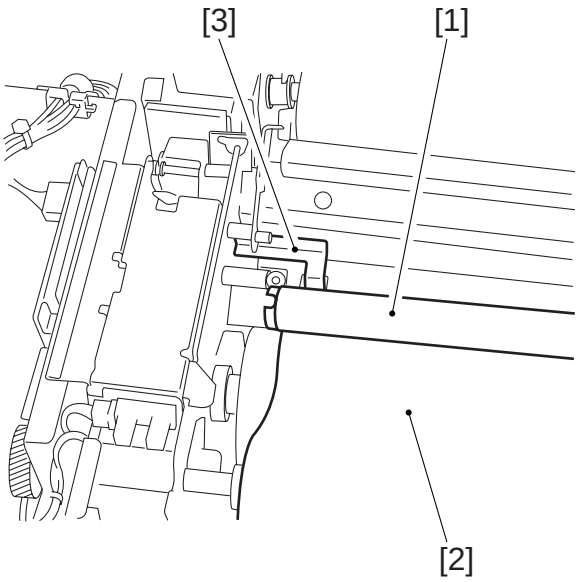


Figure 8-B505

Caution:
Check the fixing cleaning belt for skew, wrapping, and wrinkling. Further, be sure that the winding direction and the mounting orientation are as indicated.

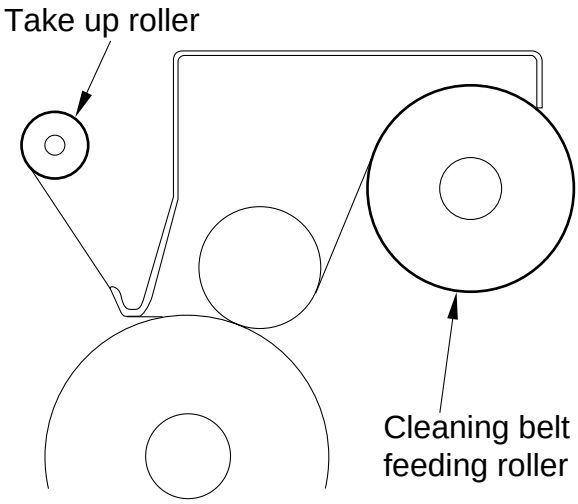


Figure 8-B506

2) After mounting the fixing cleaning belt, move the plunger [4] of the cleaning belt feeding solenoid into the direction of the arrow.

Caution:
If you have replaced the cleaning belt, be sure to return the setting under COPIER>COUNTER>MISC>FIX-WEB to '0' in service mode.

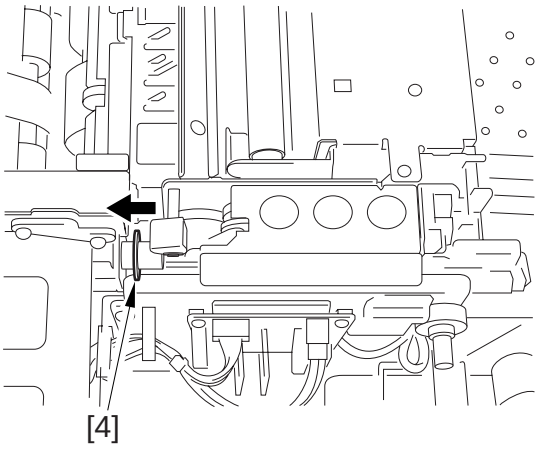


Figure 8-B507

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C. Fixing Heater and Control Parts

1. Removing the Main/Sub Heater

1) Remove the fixing assembly from the copier.
2) Remove the two screws [1], and detach the rear terminal cover [2]; then, pull out the two fastons [3].

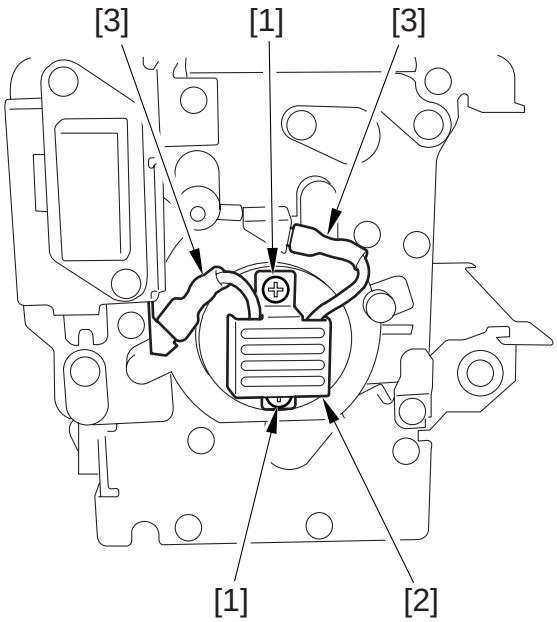


Figure 8-C501

3) Remove the two screws [4], and detach the heater positioning plate (rear) [5].

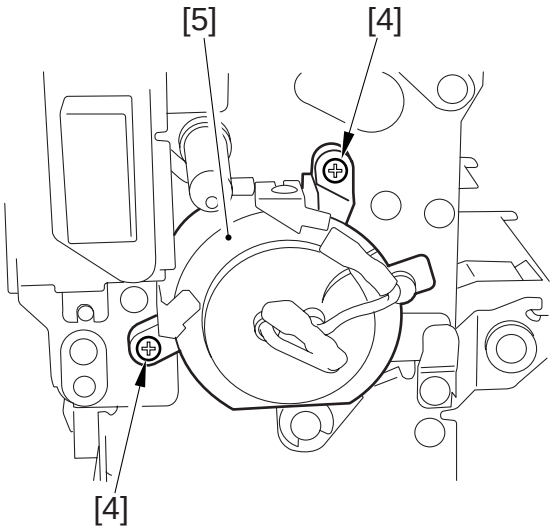


Figure 8-C502

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4) Remove the two fastons [6] at the front, and detach the screw [7]; then, detach the heater positioning plate (front) [8].

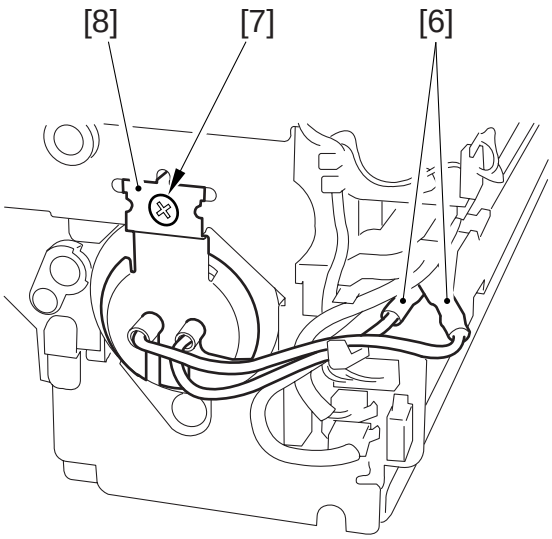


Figure 8-C503

5) Remove the main/sub heater.

2. Mounting the Main/Sub Heater

Mount the fixing heaters by reversing the steps used to remove with the following in mind:

a. Do not touch the surface of the heater.
b. Mount both heaters so that the side with the longer harness (from the terminal) is at the front.
c. Viewing from the front of the fixing assembly, mount the main heater [1] on the right and the sub heater [2] on the left.

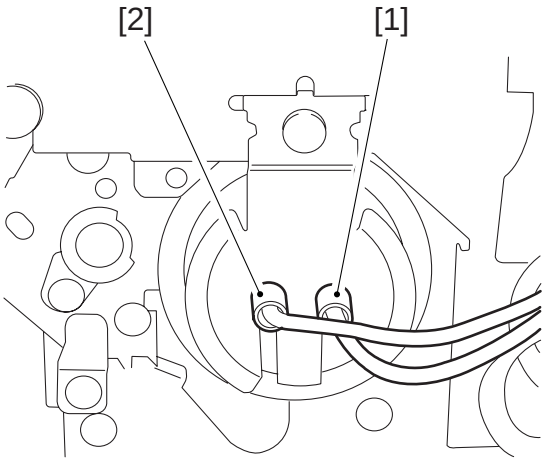


Figure 8-C504

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3. Removing the Thermal Switch

1) Remove the fixing assembly from the copier.
2) Detach the fixing cleaning belt; then, remove the two screws [1], oil pan [2], and fixing harness cover [3].

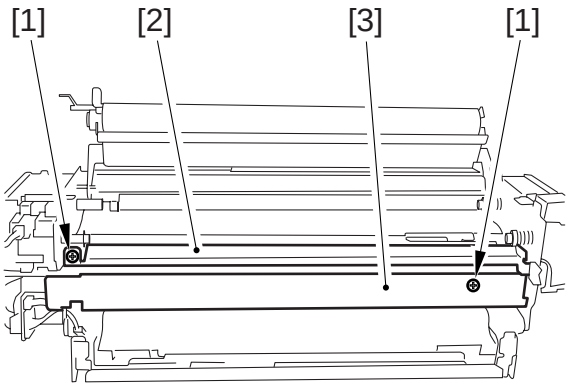


Figure 8-C505

3) Remove the faston [4]; then, remove the two screws [5], and detach the electrode assembly [6] and the thermal switch holder [7].

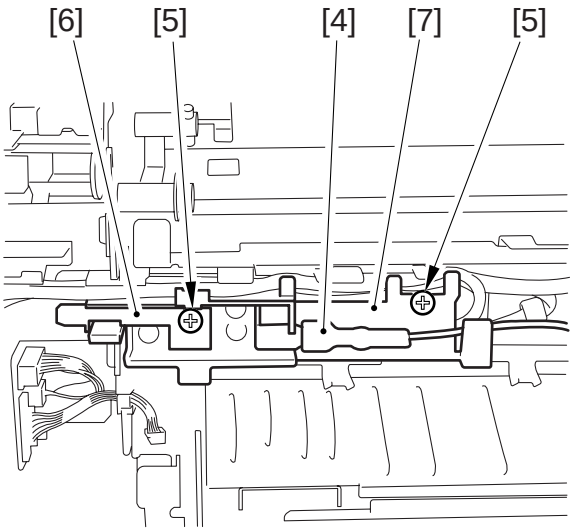


Figure 8-C506

4) Remove the four screws [8], and detach the thermal switch assembly [9].

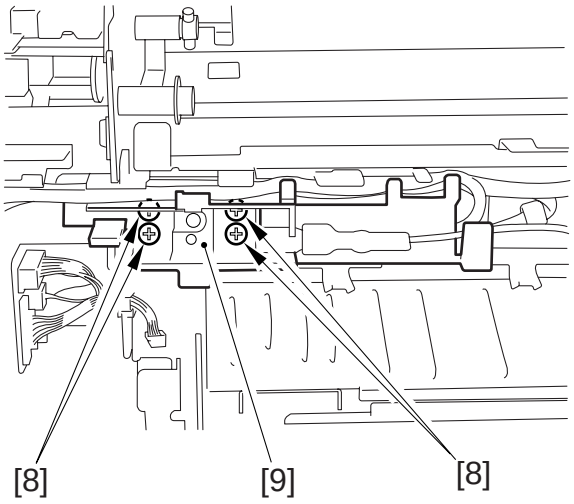


Figure 8-C507

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5) Remove the two screws [10], and detach the thermal switch [11].

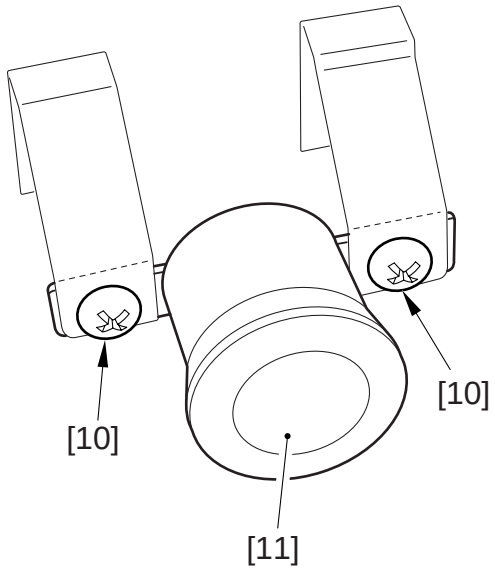


Figure 8-C508

4. Removing the Main Thermistor

1) Remove the fixing assembly from the copier.
2) Detach the fixing cleaning belt, and remove the oil pan.
3) Remove the fixing harness cover.
4) Disconnect the connector [1] of the thermistor; then, remove the screw [2], and detach the thermistor assembly [3] by shifting it to the rear.

Caution:
When shifting the thermistor assembly to the rear, take care not to damage the fixing roller.

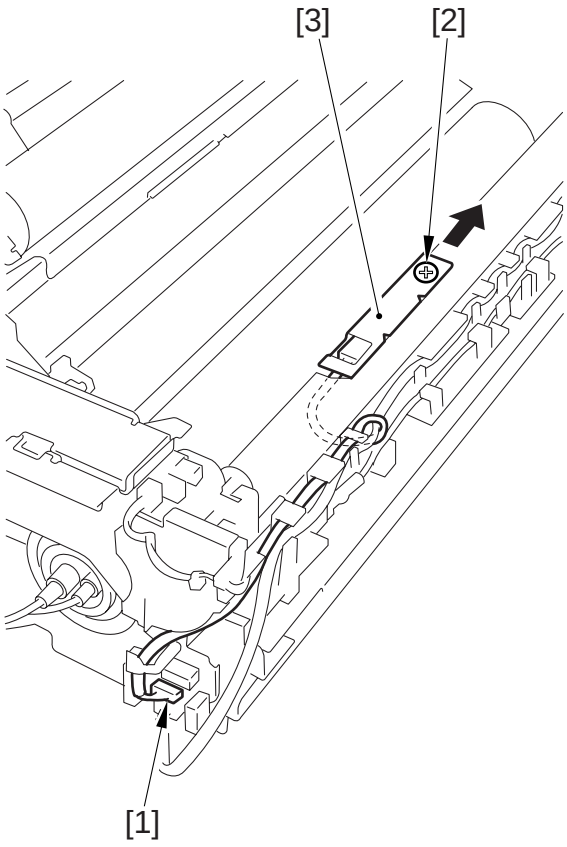


Figure 8-C509

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5) Remove the two thermistor retaining springs [4], and remove the main thermistor [5].

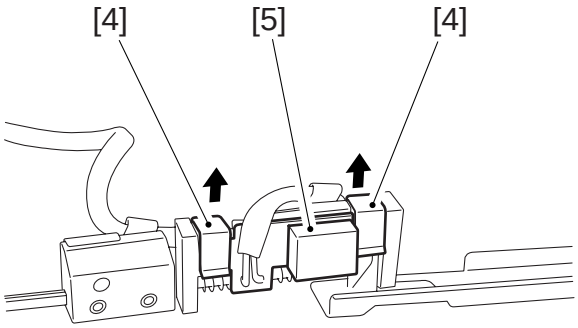


Figure 8-C510

5. Removing the Sub Thermistor

1) Slide the fixing assembly out of the copier.
2) Remove the fixing cleaning belt and the oil pan.
3) Remove the fixing harness cover.
4) Disconnect the connector [1], and remove the screw [2]; then, remove the sub thermistor assembly [3].

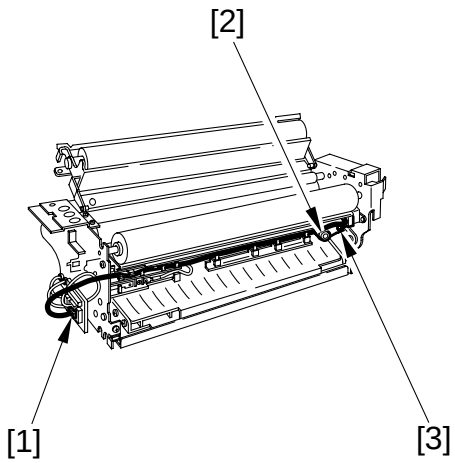


Figure 8-C511

5) Remove the screw [4], and remove the sub thermistor [5].

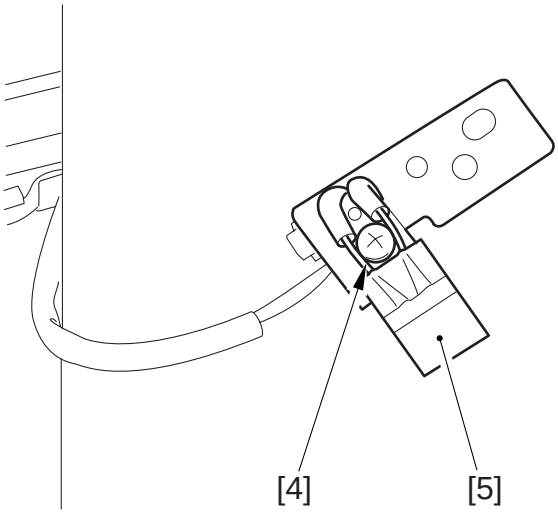


Figure 8-C512

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D. Fixing Roller Assembly

1. Removing the Upper Fixing Roller

1) Remove the fixing assembly from the copier.
2) Detach the cleaning belt, and clean the oil pan.
3) Remove the two fixing heaters.
4) Remove the screw [1], and detach the locking support plate [2] at the front.

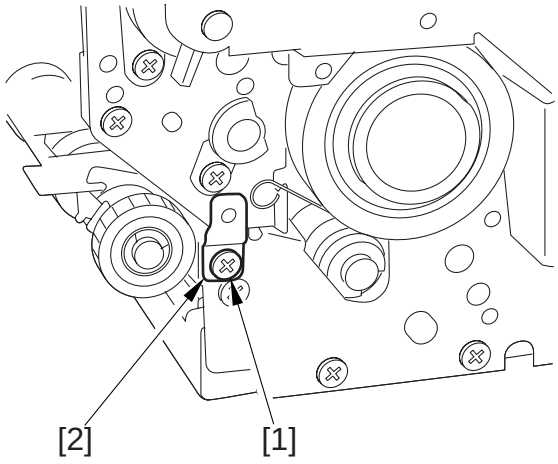


Figure 8-D501

5) Remove the screw [3], and detach the locking support plate [4] at the rear.

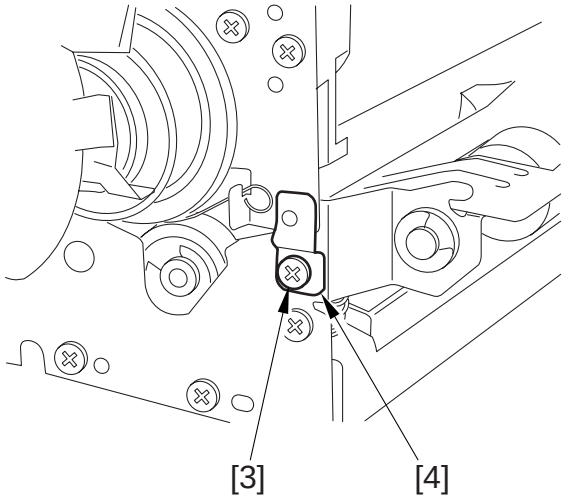


Figure 8-D502

6) Open the upper fixing unit [5].

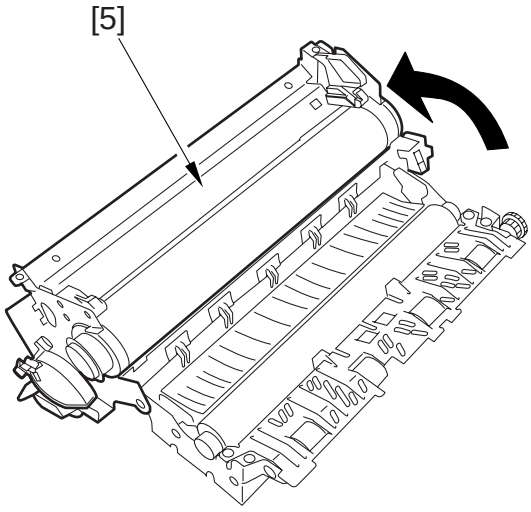


Figure 8-D503

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7) Remove the stopper [6] from the front and the rear.

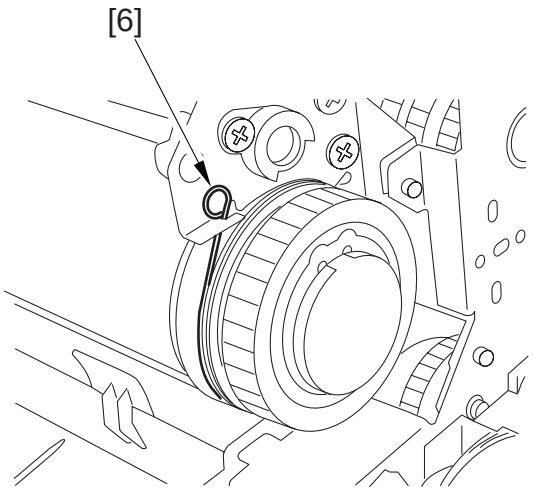


Figure 8-D504

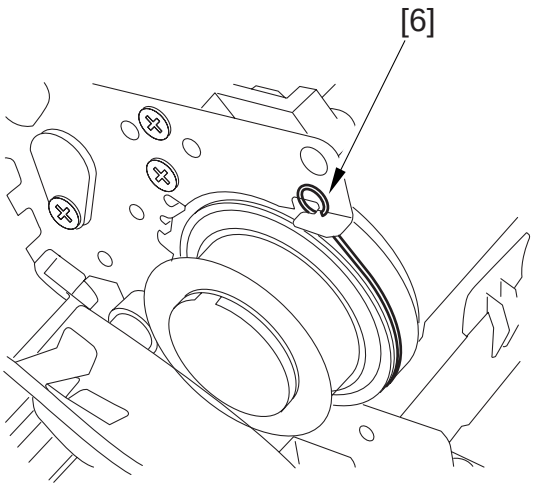


Figure 8-D505

8) While paying attention to the thermal switch and the thermistor, remove the upper roller assembly.

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9) Remove the C-ring [9] at the front; then, remove the gear [10], bushing [11], and bearing [12].

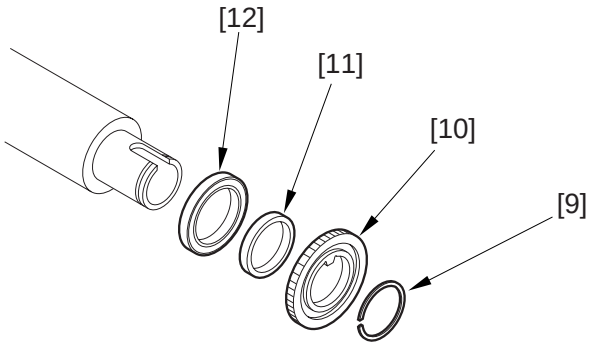


Figure 8-D506

10) Remove the C-ring [13] at the rear; then, remove the electrode plate [14], spacer [15], bearing [16], and bushing [17].

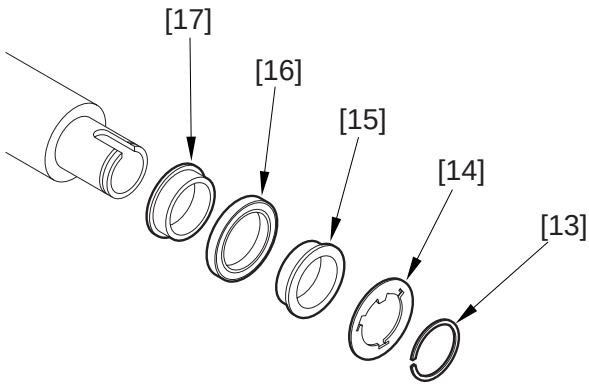


Figure 8-D507

2. Mounting the Upper Fixing Roller

Mount the upper roller by reversing the steps used to remove it.

Caution:

a. Remove it while taking care not to soil or scratch the roller surface; then, keep the roller in paper.
b. Mount it so that the long cut-off A shown in Figure 8-D508 is toward the rear.
c. When mounting it, clean the electrode plate [1] and the electrode terminal [2].

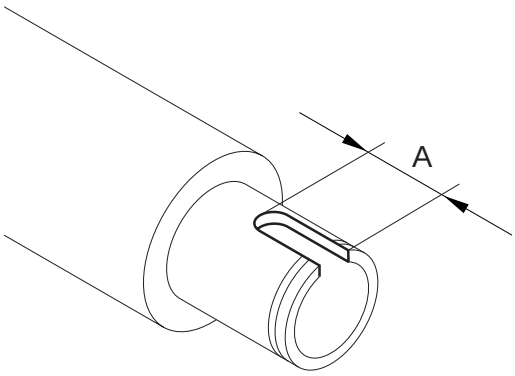


Figure 8-D508

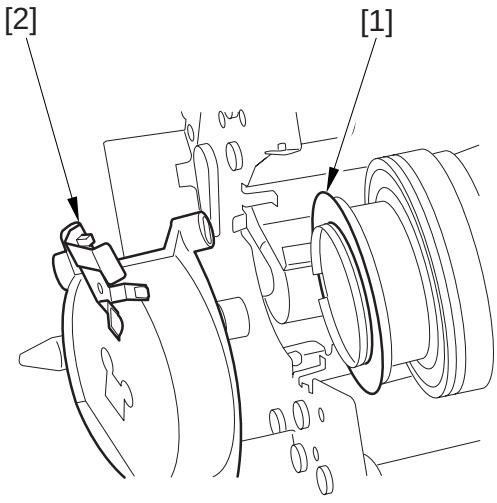


Figure 8-D509

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3. Removing the Lower Fixing Roller

1) Remove the fixing assembly from the copier.
2) Remove the fixing cleaning belt; then, clean and detach the oil pan.
3) Open the upper fixing unit.
4) Remove the two screws [1], and detach the lower separation claw support plate [2].

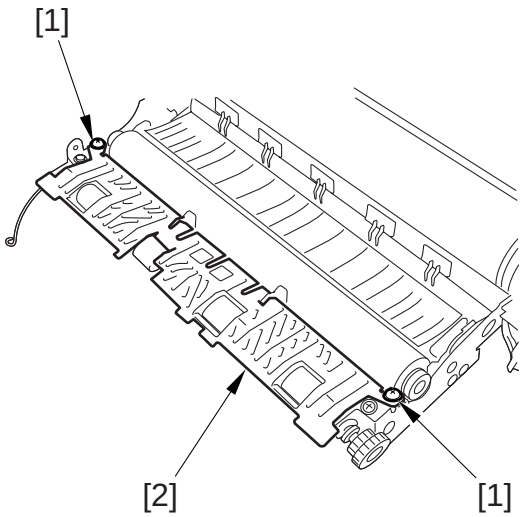


Figure 8-D510

5) Remove the lower roller [3] from the fixing assembly, and remove the E-rings [4] and the bearings [5] from both front and rear.

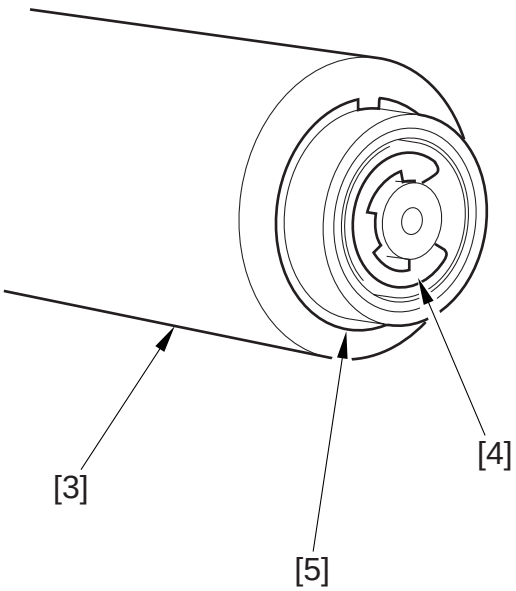


Figure 8-D511

4. Adjusting the Nip

a. Measuring the Nip

Be sure to wait 15 min or more after the copier finishes warm-up; then, make 20 A4 copies, and perform the following:

1) Place A3 paper, and select A3 on the control panel.

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2) Select COPIER>FUNCTION>FIXING> NIP-CHK in service mode to discharge paper.

b. Standards

1) Measure the area shown in Figure 8-D512.

Note:
a and c are points 10 mm from both ends of paper.

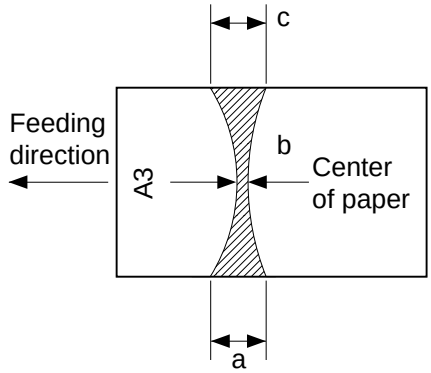


Figure 8-D512

2) Check to see if the measurements are as indicated in Table 8-D501; otherwise, perform c. "Making Adjustments."

Dimensions	Measurements*
b	7.3mm ± 0.5mm
| a-c |	0.5 mm or less

* Be sure both upper and lower rollers are fully heated.

Table 8-D501

c. Making Adjustments

1) Remove the fixing assembly from the copier.
2) Detach the fixing cleaning belt; then, clean and remove the oil pan.
3) Remove the two fixing heaters.
4) Open the upper fixing unit.
5) Adjust the nip by two adjusting screws [1] (front and rear).

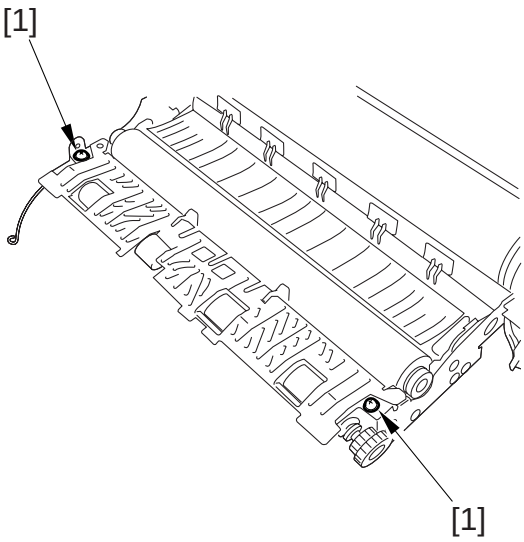


Figure 8-D513

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E. Separation Claw Assembly

1. Removing the Upper Separation Claw

1) Slide out the fixing/feeding unit from the copier.
2) Release the spring [1] used to open the fixing/delivery assembly; then, detach the upper separation claw [2].

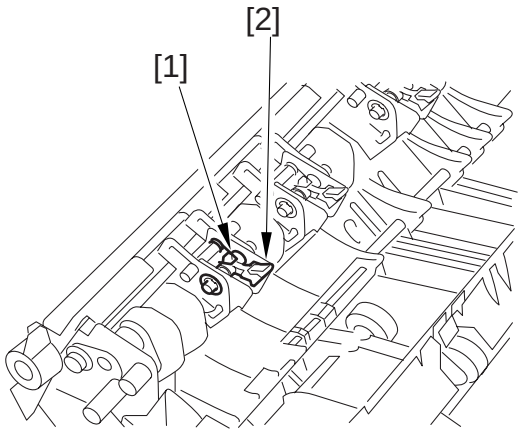


Figure 8-E501

2. Removing the Lower Separation Claw

1) Remove the fixing assembly from the copier.
2) Remove the two screws, and detach the lower separation claw assembly together with the support plate.
3) Remove the spring [1] from the lower separation claw.

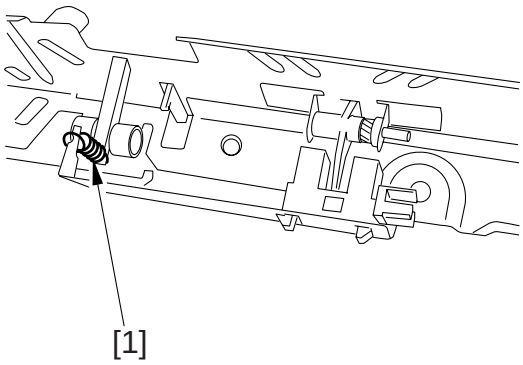


Figure 8-E502

4) Remove the three screws [2], and detach the lower separation claw support plate [3]; then, detach the separation claw.

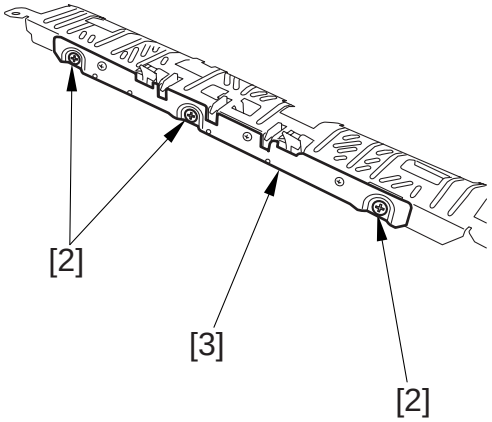


Figure 8-E503

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F. Delivery Assembly

1. Removing the External Delivery Roller

1) Remove the fixing assembly from the copier.
2) Remove the three screws [1], and detach the delivery roller guide [2].

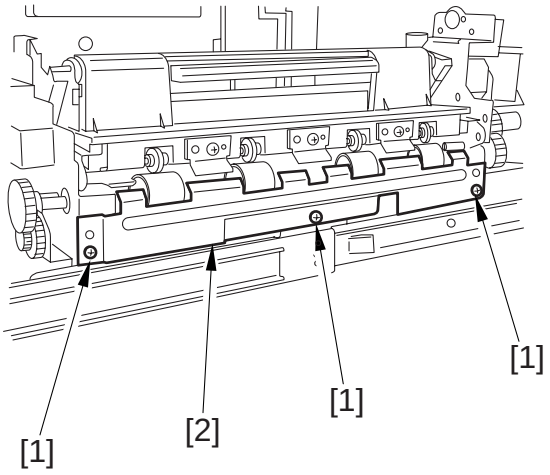


Figure 8-F501

3) Remove the E-ring [3] at the front, and slide the bearing [4] toward the gear.

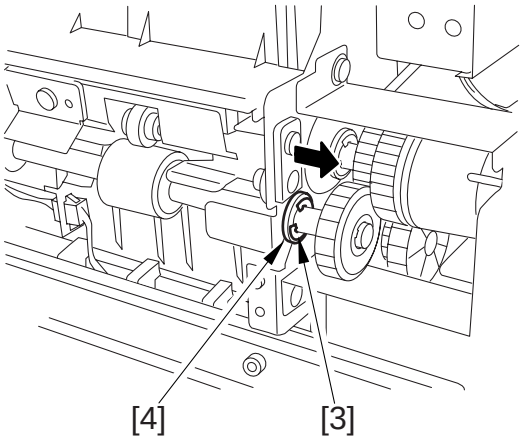


Figure 8-F502

4) Remove the E-ring [5] at the rear, and slide the bearing [6] to the rear; then, detach the external delivery roller assembly [7].

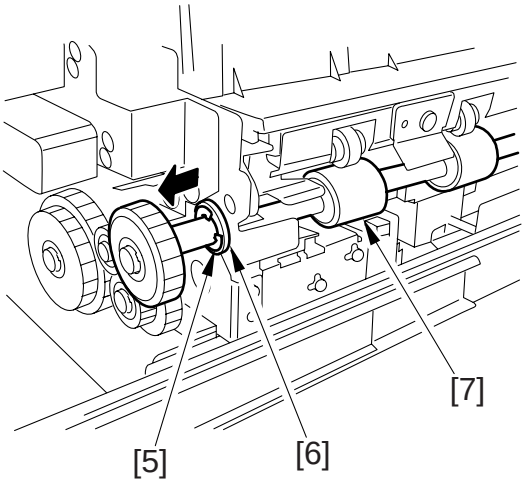


Figure 8-F503

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5) Remove the E-ring [8], one-way gear [9], and bearing [10]; then, remove the two E-rings [11], and detach the two rollers [12].

Caution:
Each roller is equipped with a parallel pin. Take care not to lose it.

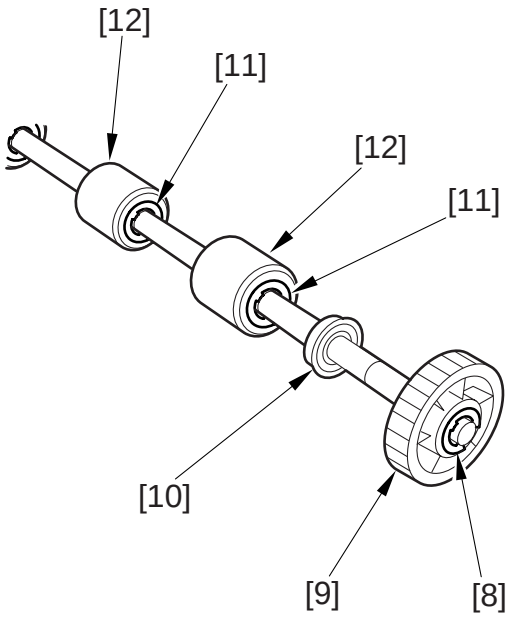


Figure 8-F504

2. Removing the Internal Delivery Roller

1) Remove the fixing assembly from the copier.
2) Remove the spring [2], three E-rings [3], and bushing [4] at the front; then, detach the drive gear [5].

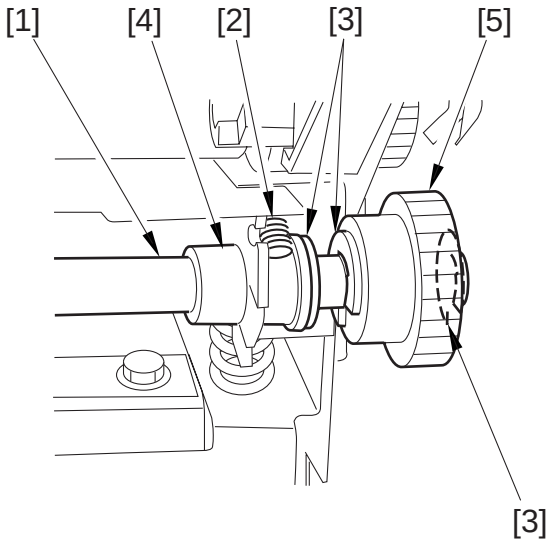


Figure 8-F505

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3) Remove the E-ring [6] and bushing [7] at the rear of the shaft; then, detach the internal delivery roller [1].

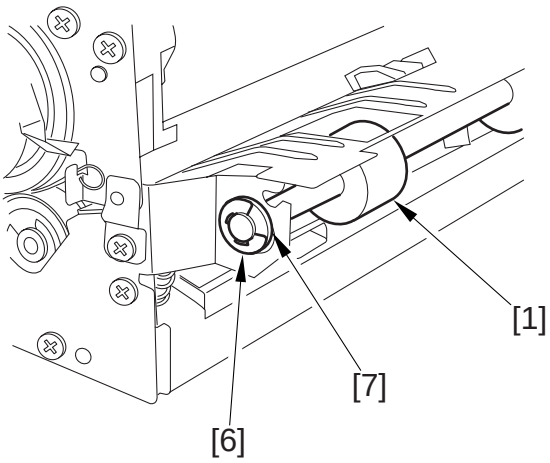


Figure 8-F506

3. Removing the Delivery Speed Switch Clutch

1) Slide out the fixing feeding unit from the copier.
2) Remove the fixing motor.
3) Remove the three screws [1], and detach the fixing front support plate [2].

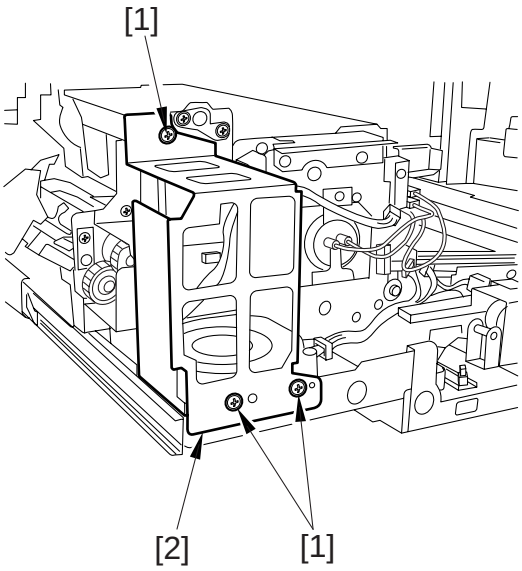


Figure 8-F507

4) Disconnect the two connectors [3]; then, remove the two screws [4], and detach the delivery speed switching clutch [5].

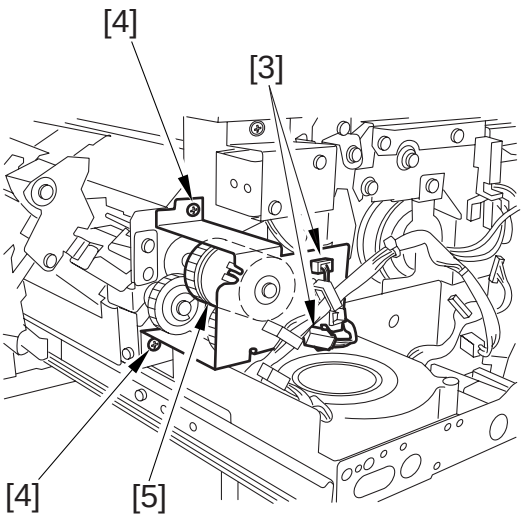


Figure 8-F508

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G. Paper Sensors

1. Removing the Claw Jam Sensor

1) Remove the fixing assembly from the copier.
2) Remove the two screws, and detach the lower separation claw assembly.
3) Detach the claw jam sensor [1] from the right side of the lower delivery assembly.

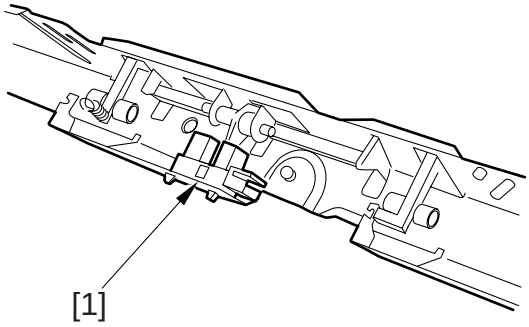


Figure 8-G501

2. Removing the External Delivery Roller

1) Remove the external delivery roller.
2) Remove the two screws [1], and detach the external delivery sensor assembly [2].

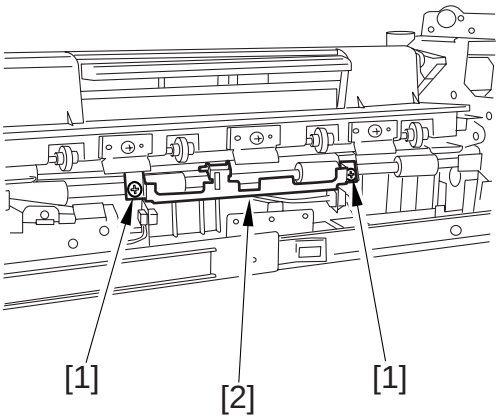


Figure 8-G502

3. Removing the Internal Delivery Sensor

1) Slide out the fixing assembly from the copier.
2) Open the upper delivery assembly; then, remove the two screws [1], and detach the internal delivery sensor [2].

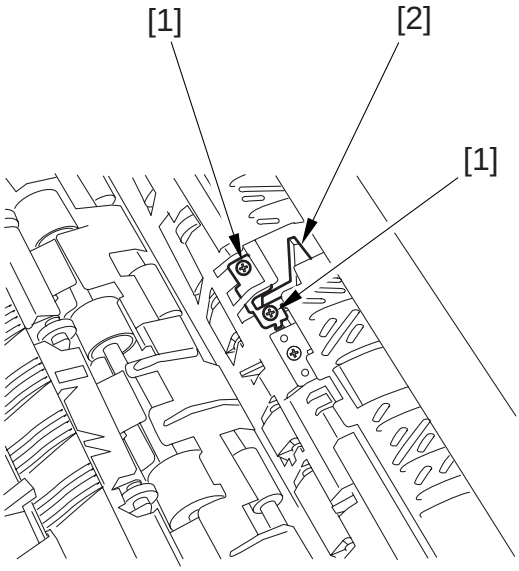


Figure 8-G503

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4. Removing the Reversal Sensor

1) Remove the fixing assembly from the copier.
2) Open the upper delivery assembly; then, remove the screw [1], and detach the reversal sensor [2].

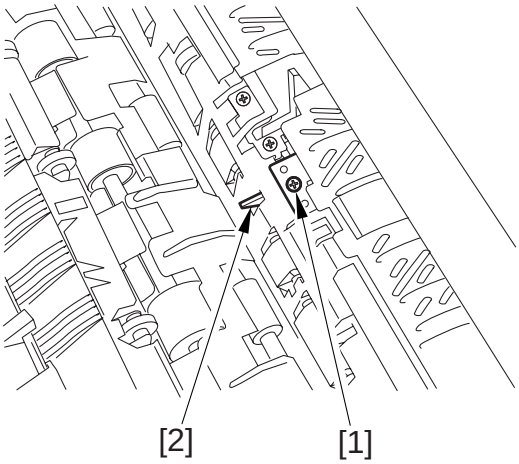


Figure 8-G504

5. Removing the Fixing/Feeding Unit Outlet Sensor

1) Remove the screw [1] from the bottom of the fixing/feeding unit, and detach the fixing/feeding outlet sensor [2].

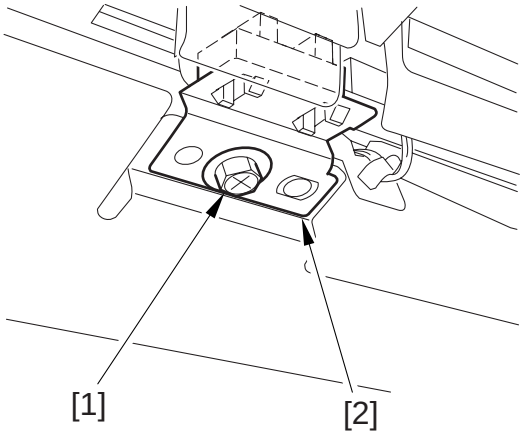


Figure 8-G505

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CHAPTER 9

EXTERNALS/AUXILIARY MECHANISMS

This chapter provides descriptions on the auxiliary control operations, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

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I . CONTROL PANEL

A. Outline

The copier's control panel consists of the PCBs shown in Figure 9-101 and a liquid crystal display (LCD) panel capable of showing images using 320 × 240 dots.

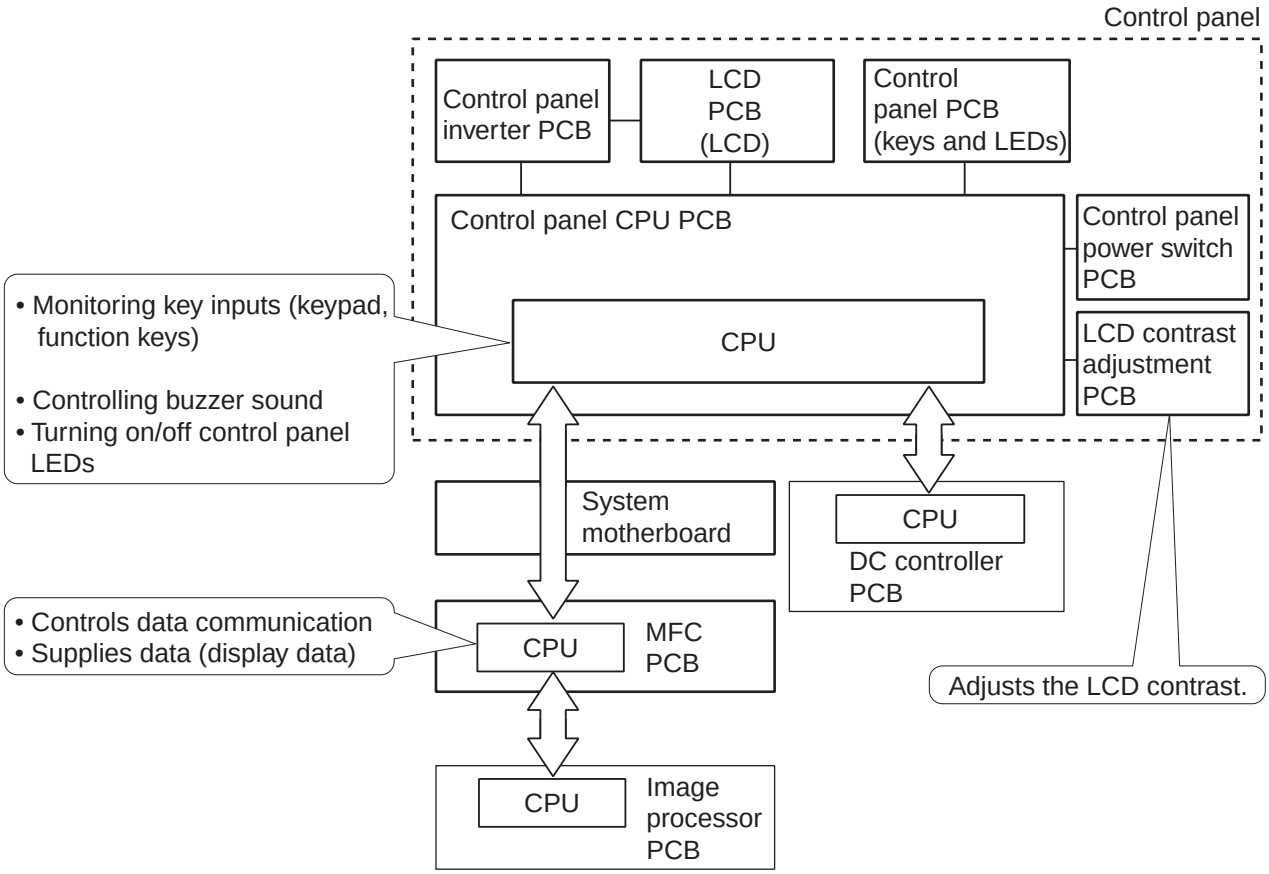


Figure 9-101 Functional Construction

Related Service Mode

COPIER>FUNCTION>PANEL> LCD-CHK	Checks the LCD for missing dots.
COPIER>FUNCTION>PANEL> LED-CHK	Starts a check on the control panel LEDs (activation).
COPIER>FUNCTION>PANEL> LED-OFF	Ends a check on the control panel LEDs (de-activation).
COPIER>FUNCTION>PANEL> KEY-CHK	Starts a check on key inputs.
COPIER>FUNCTION>PANEL> TOUCHCHK	Adjusts coordinates of the touch panel.

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II . DOWNLOADING

A. Outline

The copier allows the functions shown in Table 9-201 when it is connected to a computer with a bi-Centronics interface.

PCB	Element	Downloading	Uploading
MFC PCB	Flash ROM Backup RAM	Yes Yes	No Yes
Image processor PCB	Flash ROM Backup RAM	Yes Yes	No Yes

Table 9-201 Functions

Use the switch behind the copier's inside cover to change between downloading and uploading. For details of work, see VII. "Upgrading" in Chapter 13.

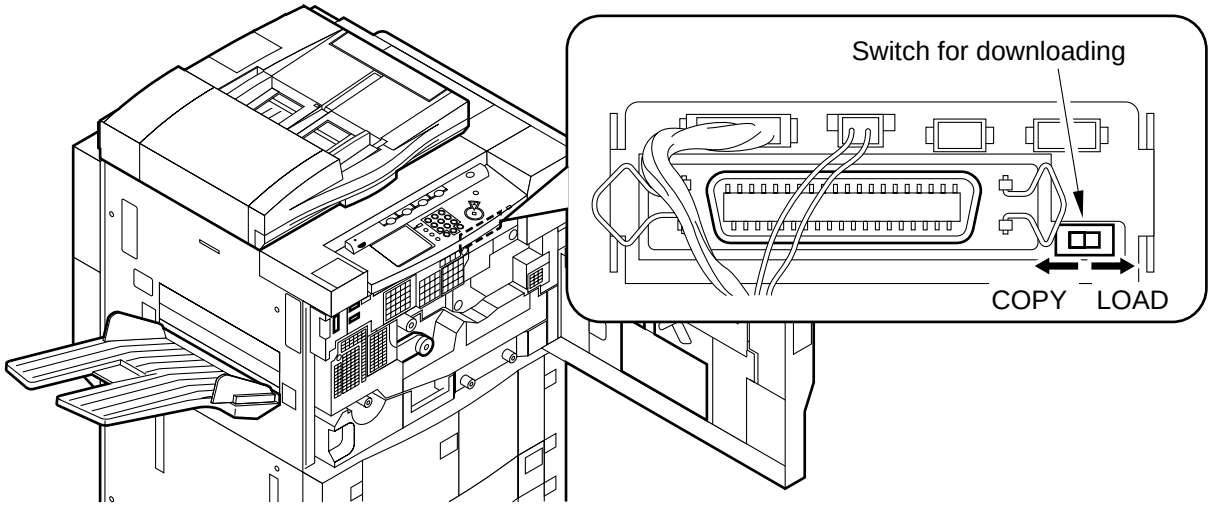


Figure 9-201 Connectors and Switches

Switch position	Copier operation	Remarks
LOAD	Downloading/uploading	No copying operation
COPY	Copying	

Table 9-202 Operation and Switch Position

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III . COUNTERS

The copier is equipped with counters for counting sheets according to the type of output. See Figures 9-301 and -302 for the arrangement of counters and sensors associated with these counters (explanations on how the counters operate by country follow).

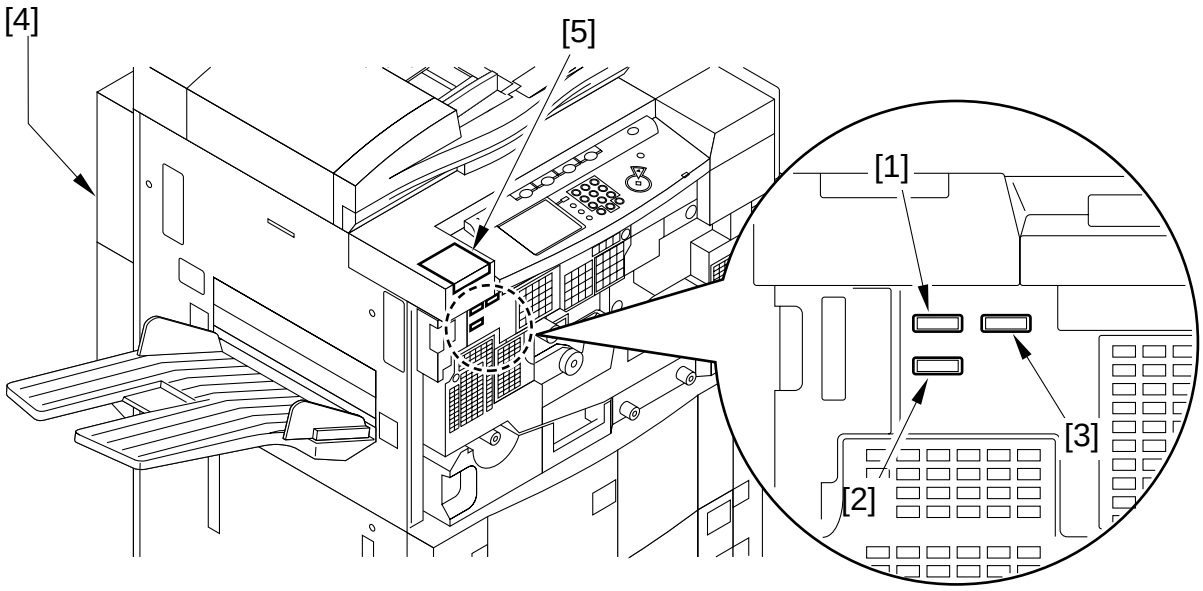


Figure 9-301 Locations of Counters

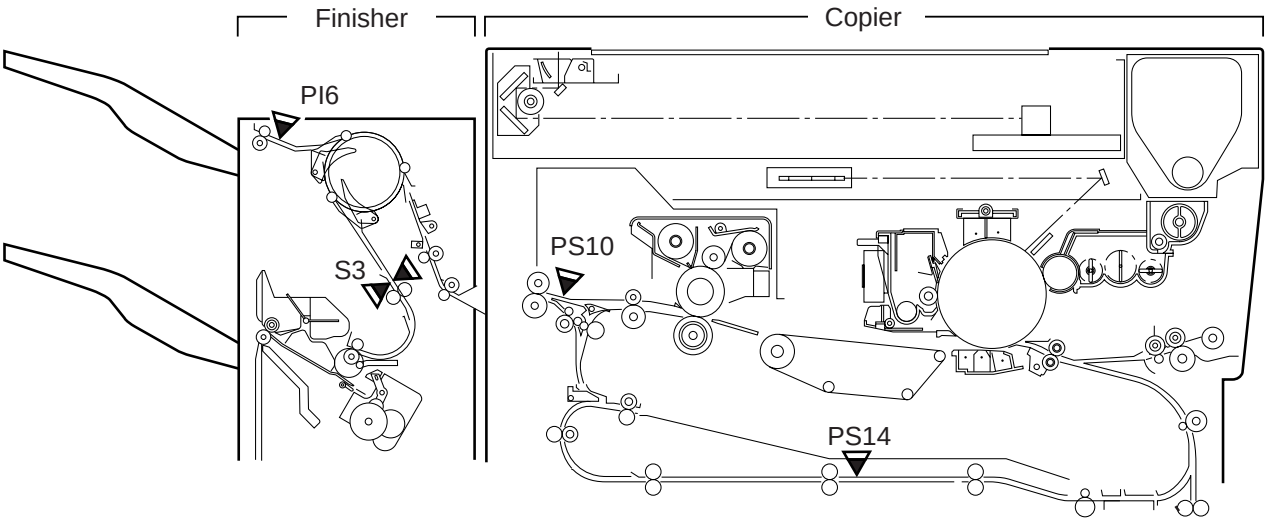


Figure 9-302 Arrangement of Sensors

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[F13-5611, F13-5614, F13-5631, F13-5691, F13-5651, F13-5671, F13-5661, F13-5661, F13-5641, F13-5601]

Ref.	Counter	Count	Count increment	
			w/ finisher	w/o finisher
[1]	Copier	Increments the count per copier output.	[Single-Sided Image] PI6 or S3 of the finisher [Double-Sided Image] 1st side: PS14 2nd side: PI6 or S3 of the finisher	[Single-Sided Image] PS10 [Double-Sided Image] 1st side: PS14 2nd side: PS10
[2]	Printer	Increments per printer output.		
[3]	———	———		
[4]	Remote Diagnostic Device II (100/120 (UL) -V areas only) Copy Data Controller-A1	The count is incremented for copy output. (The count is not incremented for printer output. However, it is incremented for an output using the mail box requiring a card.)		
[5]	Control Card V (accessory)	The count is incremented for copy output. (The count is not incremented for printer output. However, it is incremented for an output using the mail box requiring a card.)	By the pickup start signal (PCB internal signal). Reference: The pickup start signal is generated more or less at the same time as the activation of each deck, cassette, and manual feed tray clutch.	

Table 9-301 Counter Operations 1

[F13-5621, F13-5681]

Ref.	Counter	Count	Count increment	
			w/ finisher	w/o finisher
[1]	Copier	Increments the count per copier output.	[Single-Sided Image] PI6 or S3 of the finisher [Double-Sided Image] 1st side: PS14 2nd side: PI6 or S3 of the finisher	[Single-Sided Image] PS10 [Double-Side Image] 1st side: PS14 2nd side: PS10
[2]	Printer	Increments per printer output.		
[3]	Copier	Increments per large-size output.		
[4]	Remote Diagnostic Device II (100/120 (UL) -V areas only) Copy Data Controller-A1	The count is incremented for copy output. (The count is not incremented for printer output. However, it is incremented for an output using the mail box requiring a card.)		
[5]	Control Card V (accessory)	The count is incremented for copy output. (The count is not incremented for printer output. However, it is incremented for an output using the mail box requiring a card.)	By the pickup start signal (PCB internal signal). Reference: The pickup start signal is generated more or less at the same time as the activation of each deck, cassette, and manual feed tray clutch.	

Table 9-302 Counter Operations 2

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IV . FANS

A. Arrangement, Functions, and Error Codes

Table 9-401 shows the names and functions of the copier's fans and error codes associated with the fans.

Notation	Name	Functions	2-speed control (voltage)	Error code
FM1	Primary charging assembly fan	Prevents soiling of the wire in the primary charging assembly.	Yes (24/12v)	E824
FM2	Fixing assembly heat discharge fan	Discharges heat from around the fixing assembly.	Yes (24/12v)	E805
FM3	Scanner cooling fan	Cools the scanner	Yes (24/12v)	E226
FM4	Stream reading fan	Cools the copyboard glass in stream reading	No (24v)	
FM5	Laser driver	Cools the laser driver PCB	No (24v)	E121
FM6	De-curling fan	Cools copy paper	Yes (24/12v)	No
FM7	Feeding fan	Draws copy paper to the feeding belt.	Yes (24/12v)	No
FM8	Drum fan	Draws and removes ozone from around the drum and stray toner.	Yes (24/18v)	E820
FM9	Inverter cooling fan	Cools the control panel inverter assembly.	No (24v)	E251
FM10	Pre-transfer charging assembly fan	Discharges ozone from around the pre-transfer charging assembly.	Yes (24/12v)	E823
FM11	Power supply cooling fan 1	Cools the DC power supply PCB	Yes (24/12v)	E804
FM12	Power supply cooling fan 2	Cools the DC power supply PCB	Yes (24/12v)	E804
FM13	Separation fan	Facilitates separation of copy paper from the drum.	Yes (24/12v)	E830
FM14	Laser scanner motor cooling fan	Cools the laser scanner motor, and insulates it from the fixing assembly.	No (24v)	E111

Table 9-401 Fans

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The fans are arranged as shown in Figure 9-401; the arrows show the direction of air current:

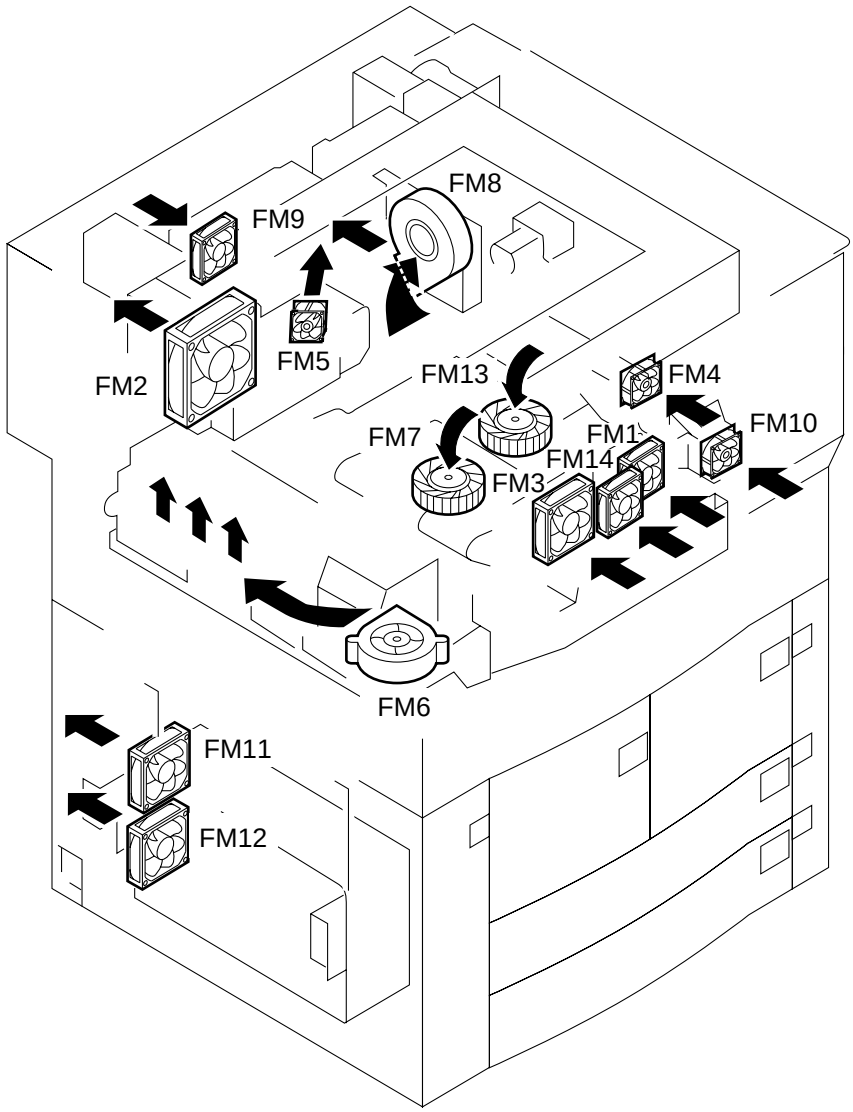


Figure 9-401 Arrangement of the Fans

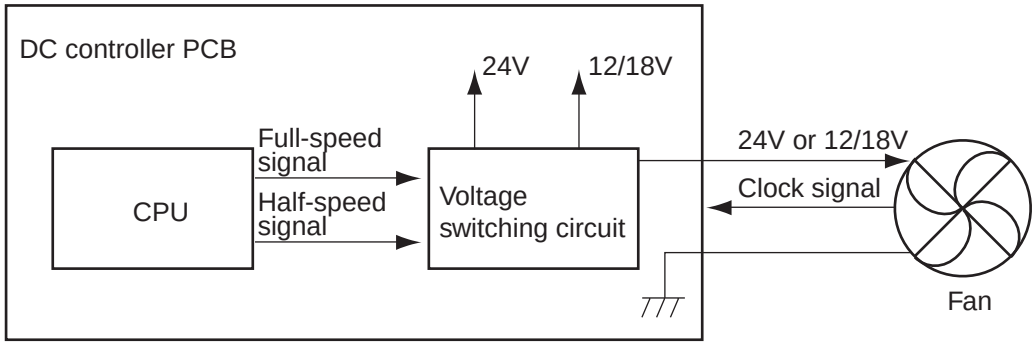
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B. Sequence of Operations

1. 2-Speed Control

Some of the copier's fans are designed for 2-speed control (Table 9-401). The speed is switched by the voltage switching circuit of each fan by switching voltage levels.

Some fans are controlled according to the state of the printer, while some are controlled by the state of the scanning lamp.



In the case of FM2, the voltage is reduced to 18 V during half-speed rotation.

Figure 9-402 2-Speed Control Block Diagram

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2. Sequence of Operations

The fans operate as follows, ones controlled according to the state of the printer and ones controlled by the state of the scanning lamp:

(FM3, FM4, FM11, and FM12 operate based on the state of both the printer unit and the scanning lamp, and the control mechanism for higher speed is used for the chart.)

a. Fans Operating According to the State of the Printer Unit

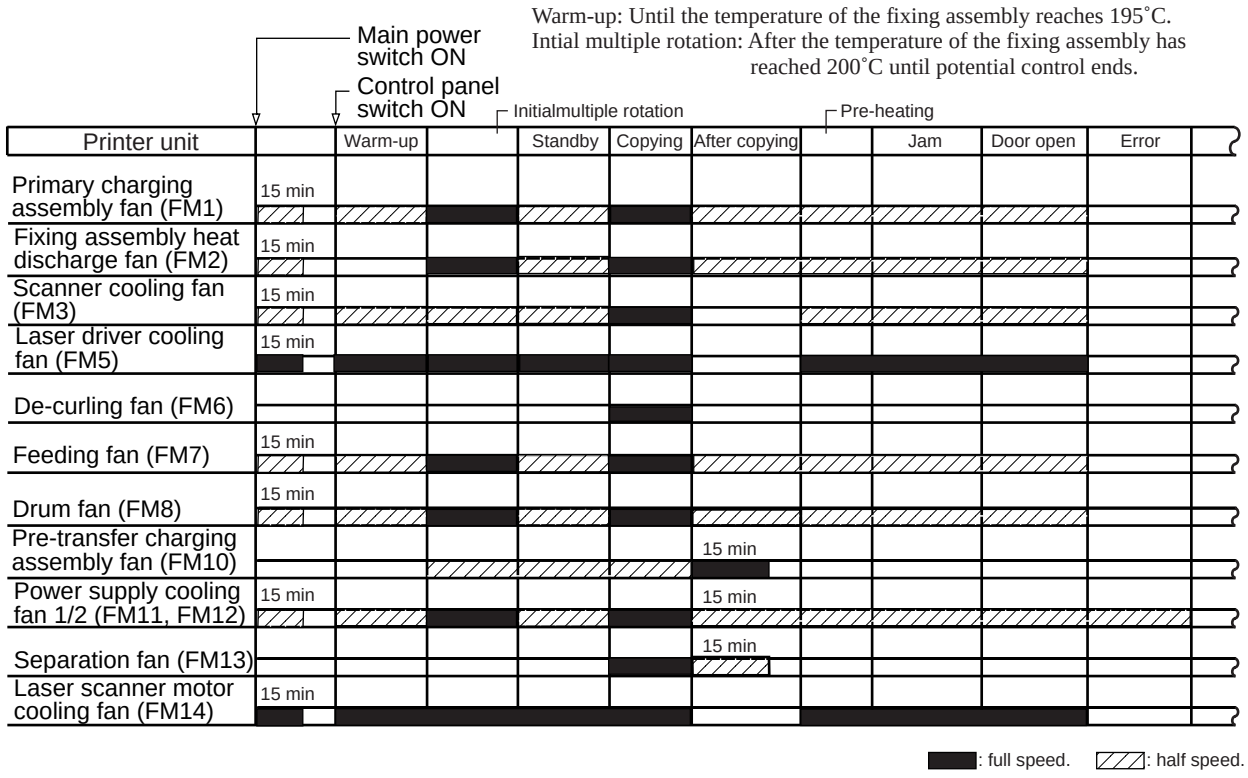


Figure 9-403

b. Fans Operating According to the State of the Scanning Lamp

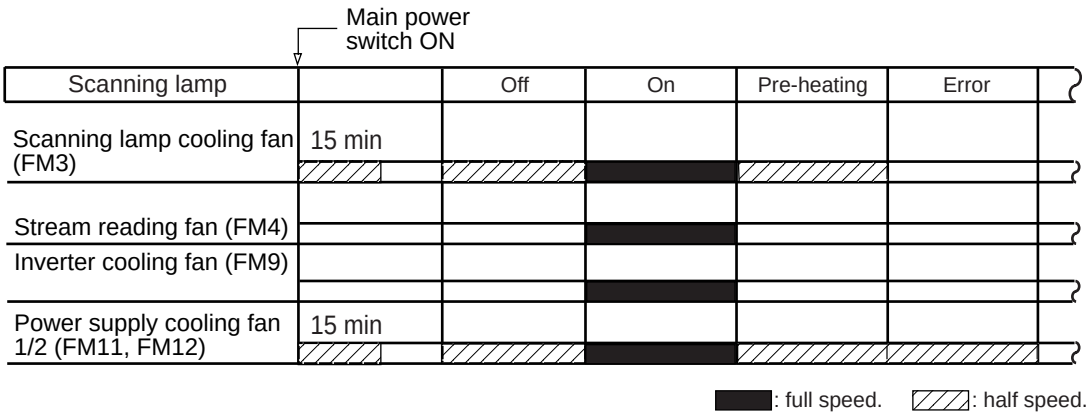


Figure 9-404

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V . POWER SUPPLY

A. Outline of the Power Supply

The copier's DC power is supplied by the DC power supply PCB and the relay PCB.

PCB	Function
DC power supply PCB	• Generates DC power from AC power. • Protects against overcurrent.
Relay PCB	• Generates DC power from DC power (24V→18V) • Distributes DC power to loads. • Protects each load against overcurrent.

Table 9-501 Major Functions

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Figure 9-501 shows how the copier's power supplies are arranged:

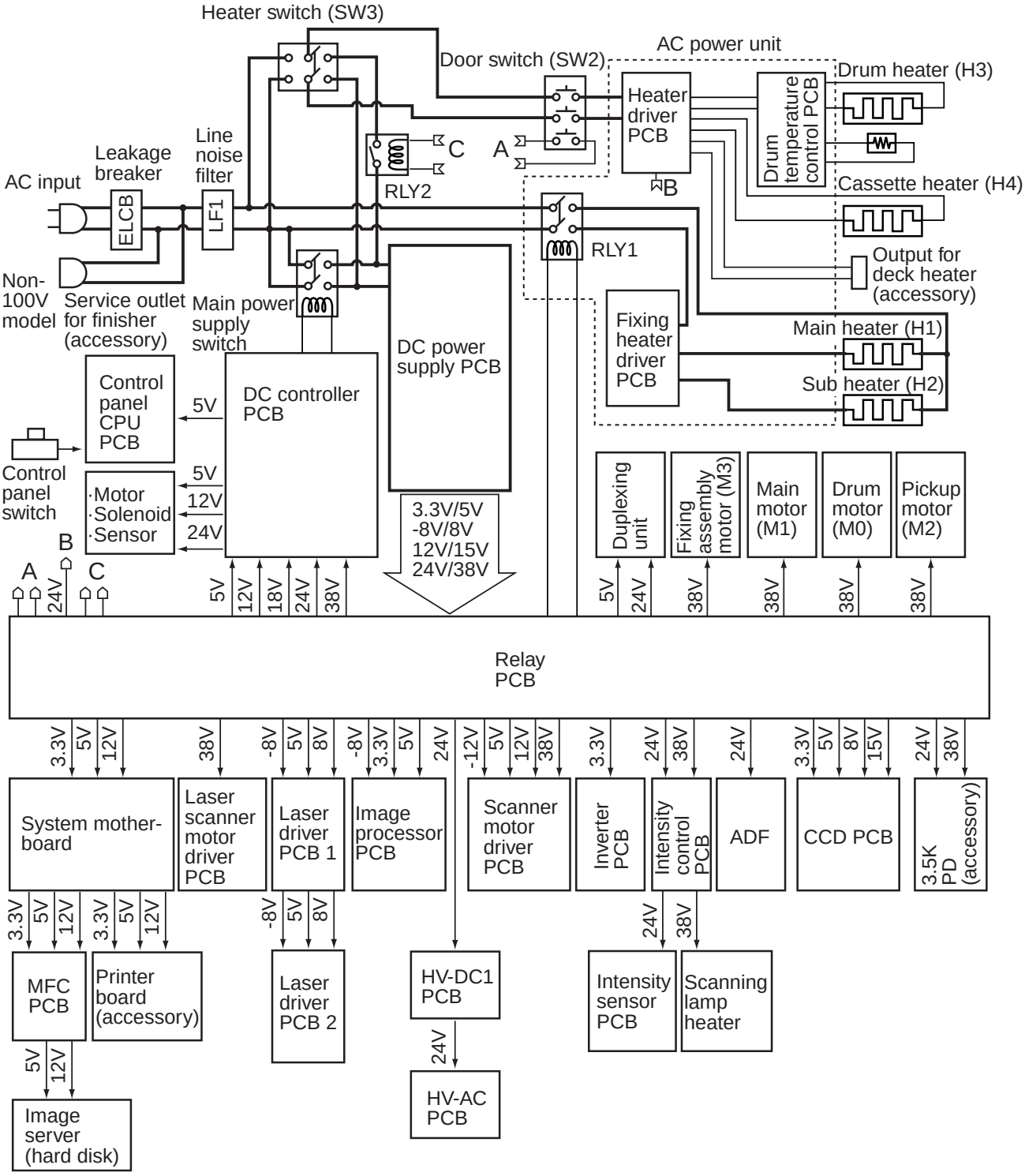


Figure 9-501 Power Supply Block Diagram

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B. Turning On the Power

1. Outline

The copier's power output is controlled by the main power supply switch and control panel power switch, or signals from the printer board (accessory).

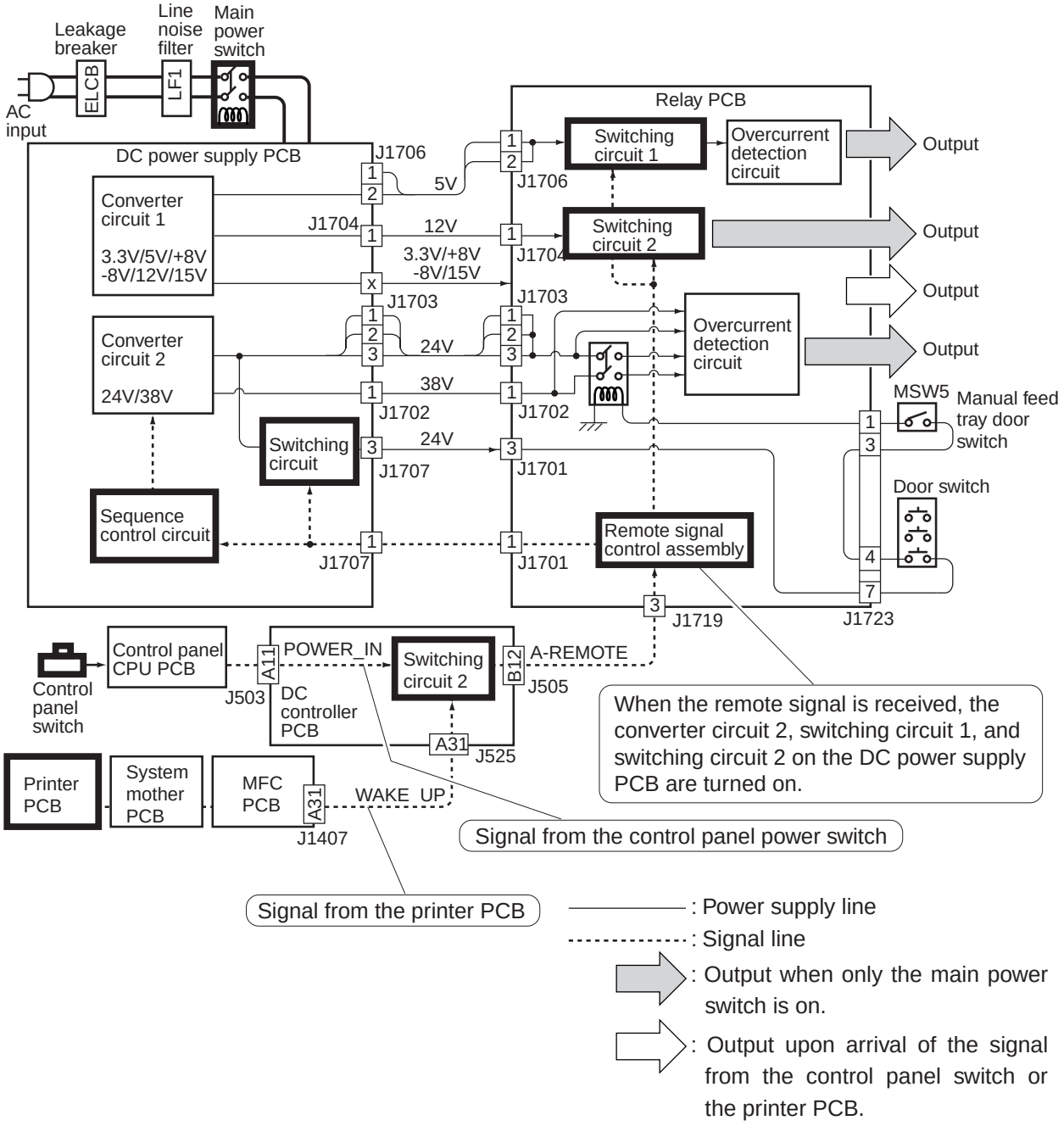


Figure 9-502 Power-On Sequence

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Table 9-502 shows the output of the power supply in relation to combinations of the printer board signal and the states of the main power switch and the control panel switch.

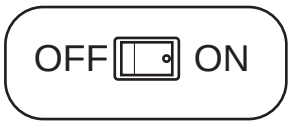
Main power switch	Control panel switch or printer board signal	Power supply output	Remarks
OFF	OFF	None	If the heater switch is on, the drum heater and the cassette heater are supplied with power (AC). heater switch (SW3) 
ON	OFF	3.3V* 5V* +8V -8V 12V* 15V	*Supplied only to the following PCBs: 3.3V: printer PCB (accessory) 5V: printer PCB (accessory) DC controller PCB 12V: printer PCB (accessory)
ON	ON	All	

Table 9-502 Power Supply and Switch Operation

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2. Power Supply at Main Power Switch-On

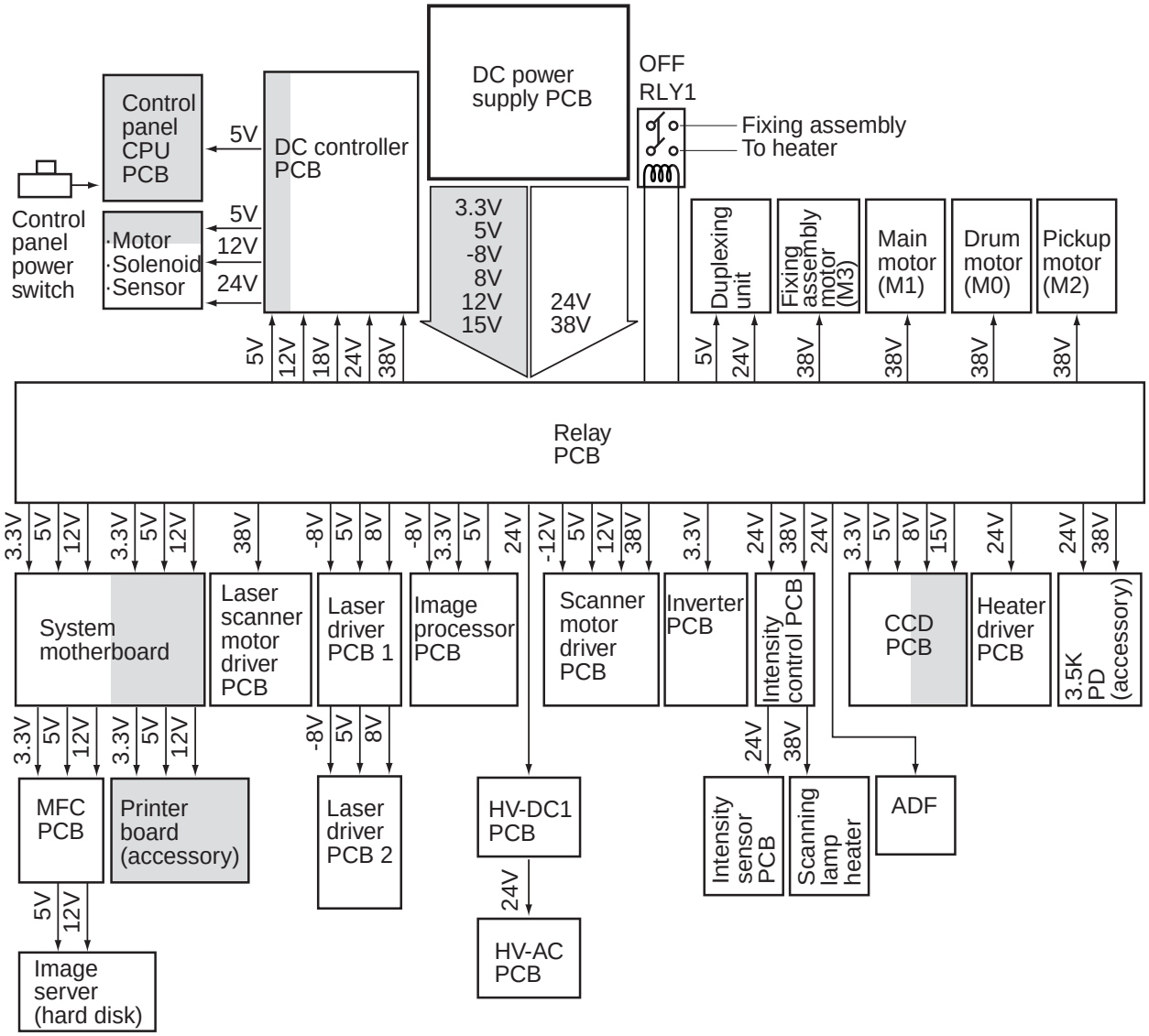
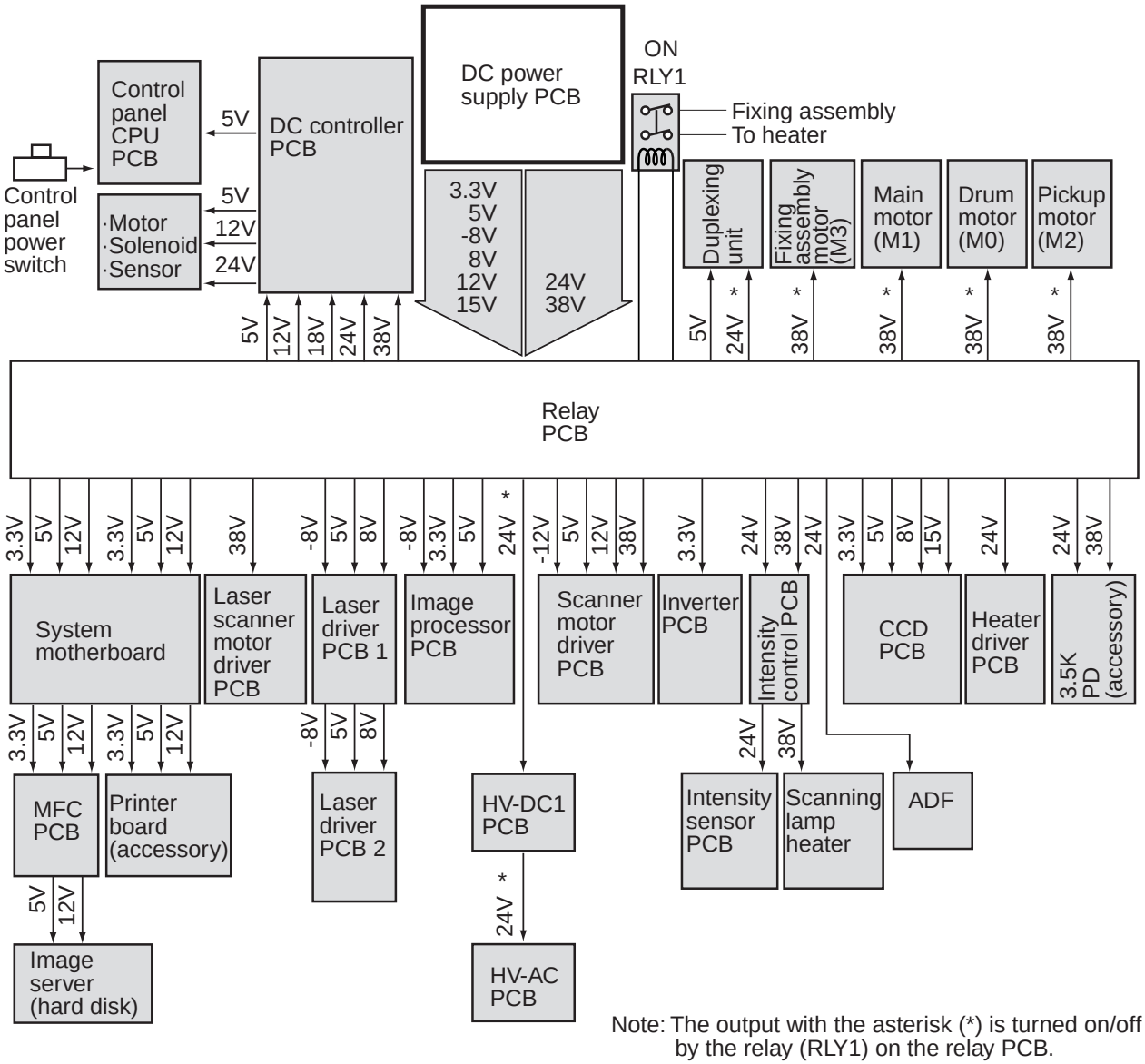


Figure 9-503 Power Supply Block Diagram

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3. Power Supply at Main Power Switch-On and Control Panel Switch-On



Note: The output with the asterisk (*) is turned on/off by the relay (RLY1) on the relay PCB.

Figure 9-504 Power Supply Block Diagram

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C. Rated Outputs of the DC Power Supply PCB

Output (V)	3.3	5	+8	-8	12	15	24		38
Connector No.	J1704-3	J1706-1 J1706-2	J1705-5	J1705-7	J1704-1	J1705-9	J1701-3	J1703-1 J1703-2 J1703-3	J1702-1
Output voltage tolerance (%)	±5	±4	±10	±10	+7 -10	±10	±5		+10 -7
Rated current (A)	4.5	8	0.6	0.3	2.1	0.5	0.3	12.0	6.5
Overcurrent protection level (A)	4.5 to 5.0	22 to 25	1.8 to 2.5	1.2 to 2.0	5.0 to 6.0	1.5 to 2.5	23 to 24		13 to 14

Note: However, the following applies for the AC input: for 100-V model, 85 to 110 V; for 120-V model, 97.8 to 132 V; for 230-V model, 187 to 264 V.

Table 9-503 Rated Outputs

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D. Protective Functions

The copier is designed to automatically stop the output of the DC power supply as soon as the overcurrent protective mechanism turns on.

If an overcurrent is detected by the overcurrent detection circuit A, outputs [1] and [2] are stopped; this is to prevent malfunction of the copier, as output [1] is used by the logic system.

If the overcurrent detection circuit B detects an overcurrent, output [2] is stopped.

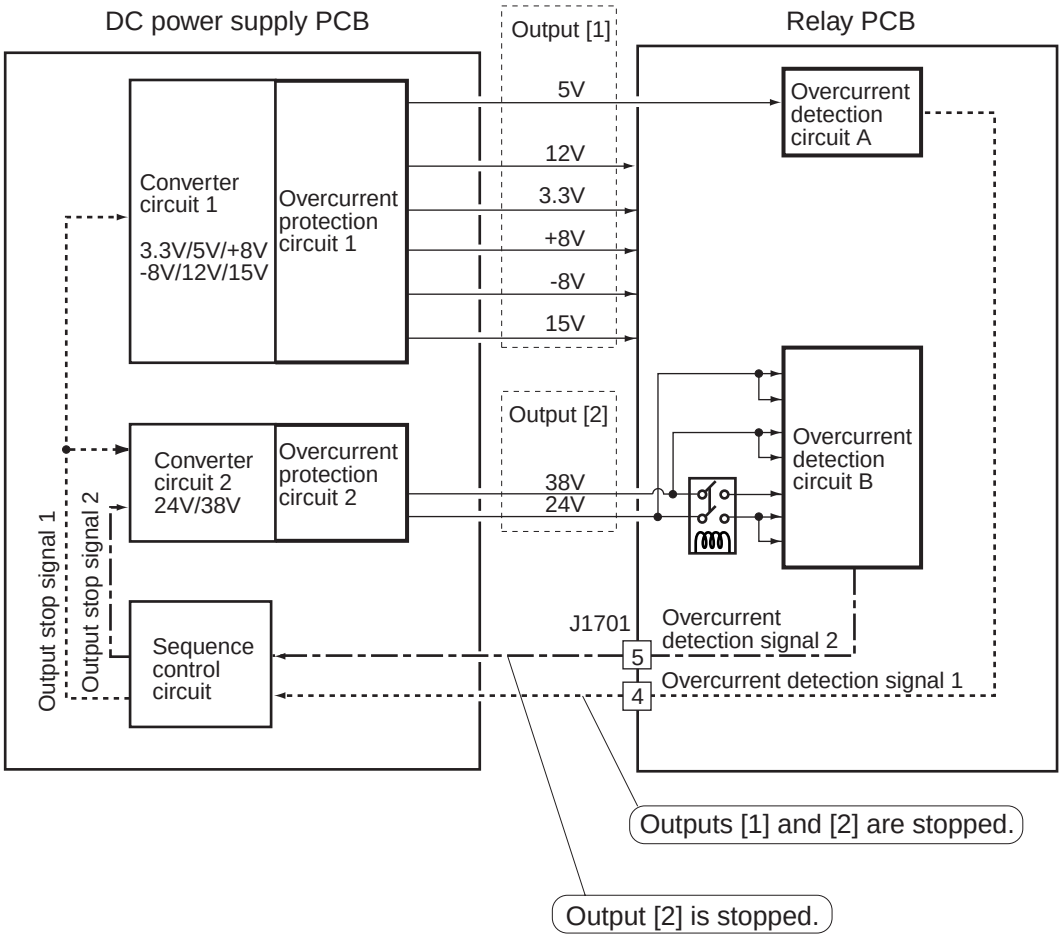


Figure 9-505 Protective Function Block Diagram

Detection by	Copier operation	Resetting
Overcurrent detection circuit A	Stops outputs [1] and [2] from the DC power supply PCB.	Turn off the main power switch, and remove the cause; then, leave the machine alone for about 3 min, and turn on the main power switch.
Overcurrent detection circuit B	Stops output [2] from the DC power supply PCB.	Remove the cause, and turn off and then on the control panel power switch.

Table 9-504 Protective Functions

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E. Backup Battery

The copier's MFC PCB and image processor are equipped with a lithium battery for backing up data needed as when the power plug is disconnected.

1. MFC PCB

Uses	• Drives the clock inside the copier. • Retains the job counter readings. • Retains the contents shown in user mode. (Table 9-507) • Retains contents shown in service mode. (Table 9-506)
Life	• About 5 yr (with the power plug disconnected)
Replacement	• When the MFC PCB is replaced (recharging not possible)
After replacement	• Enter the values on the service label.

Table 9-505 Backup Battery

Contents Retained for Service Mode

OPTION >BODY	MODEL-SZ	OPTION >CST	U1-NAME U2-NAME U3-NAME U4-NAME CST-U1 CST-U2 CST-U3 CST-U4
OPTION>USER	COPY-LIM SLEEP WEB-DISP DATE-DSP MB-CCV PM-DENS		

Table 9-506

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Contents Retained for User Mode

CUSTOM COMMON SETTINGS	• Sets the buzzer. • Turns on/off the cassette auto select mechanism. • Sets the special tray. • Selects printing priority. • Changes power save mode. • Enables/disables inch input. • Selects paper icons. • Sets system control management IDs. • Manage ID by group.	CUSTOM COPY SETTINGS	• Selects print photo mode. • Enables feeder manual feed auto start. • Changes fit-to-page mode. • Enables/disables original orientation auto detection. • Change standard mode.
CUSTOM COPY SETTINGS	• Set Standard KEY 1,2 • Set AUTO ORIENTAITION	TIMER SETTINGS	• Changes auto sleep time. • Changes auto clear time. • Changes low-power mode shift time. • Changes silent mode shift time. • Sets the weekly timer.
		ADJUSTMENT/ CLEANING	• Zoom fine adjustment

Table 9-507

2. Image Processor PCB

Uses	• Retains counter readings. • Retains contents shown in user mode. (Table 9-510) • Retains contents shown in service mode. (Table 9-509)
Life	• About 5 yr (with the power plug disconnected)
Replacement	• When the image processor PCB is replaced (recharging is not possible)
After replacement	• Enter the values recorded on the service label.

Table 9-508 Back-Up Battery

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Contents Retained for Service Mode

COPIER> ADJUST>LAMP	L-DATA
AE	AE-TBL
ADJ-XY	ADJ-X ADJ-Y ADJ-S
CCD	GAIN-E GAIN-O OFSET-E OFSET-O SH-TRGT
LASER	PVE-OFST LA-DELAY LA-PWR-A LA-PWR-B IP-DELAY
DEVELOP	DE-DC DE-NO-DC DE-OFST
DENS	DENS-ADJ
BLANK	BLANK-T BLANK-B
V-CONT	EPOTOFST VL-OFST VD-OFST

COPIER> ADJUST>HV-PRI	GRID
HV-TR	TR-N1 TR-N2 PRE-TR
HV-SP	SP-N1 SP-N2
FEED-ADJ	REGIST ADJ-REFE
CST-ADJ	C3-STMTR C3-A4R C4-STMTR C4-A4R MF-A4R MF-A6R MF-A4 C3-LVOL C3-HVOL C4-LVOL C4-HVOL
COPIER> OPTION>BODY	PO-CNT TRNSG-SW FIX-TEMP CPMKP-SW IDL-MODE FUZZY SCANSLCT

COPIER> OPTION>BODY	SCANSLCT OHP-TEMP PM-RD-MD OHP-CNT CNT-W/HM PR-SEL CNT-W/PR FIX-TMPI TRSW-P-B SP-MODE PR-D-SEL
USER	SIZE-DET
CST	P-SZ-C1 P-SZ-C2 C1-DWSW C2-DWSW DK-DWSW C3-DWSW C4-DWSW
ACC	DK-P
ACC> FEEDER> ADJUST	STRD-S STRD-L
OPTION	DOC-F-SW SIZE-SW
SORTER> ADJUST	BLNK-SW

Table 9-509

Contents Retained for User Mode

Adjustment/cleaning	• Changes middle binding position. • Changes double stapling width.

Table 9-510

⚠Caution:
- Replace the lithium battery only with the one listed in the Parts Catalog.
- Use of another battery may present a risk of fire or explosion.
- The battery may present a fire or chemical burn hazard if mistreated.
- Do not recharge, disassemble or dispose of it in fire. Keep the battery out of reach of children and discard any used battery promptly.

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VI . OTHERS

A. Sleep Mode

1. Outline

The copier is provided with sleep mode, in which power consumption is reduced in standby state by limiting the destinations of power. (Only the main power supply switch is on.)

The copier will automatically shift to sleep mode when standby state continues for a specific period of time*.

*May be changed in user mode.

Related User Mode

Changing auto sleep time	10, 15, 20, 30, 40, 50, 60*, 90 min; 2, 3, 4 hr *Factory default.

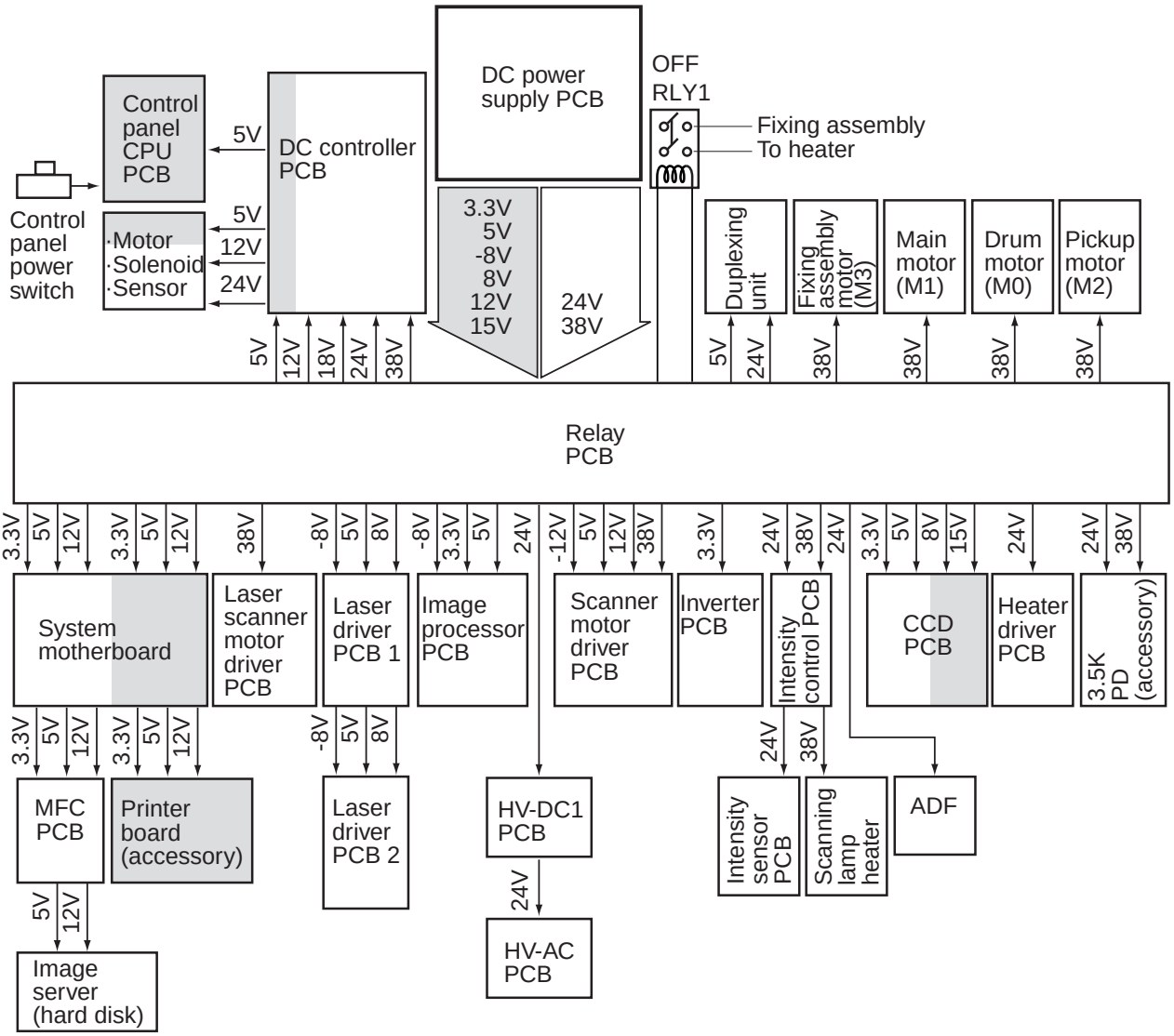


Figure 9-601 Power Supply in Sleep Mode

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2. Operation

a. Shift from Standby to Sleep Mode

The timer on the MFC PCB keeps track of lapses of time, and it issues a sleep mode shift command when a specific period of time passes. In response to the sleep shift command, the DC controller PCB causes the DC_POWER_OFF signal to go '0' and the A_REMOTE signal to go '0'.

In response to the A_REMOTE signal=0, the relay circuit switches the power supply to sleep mode.

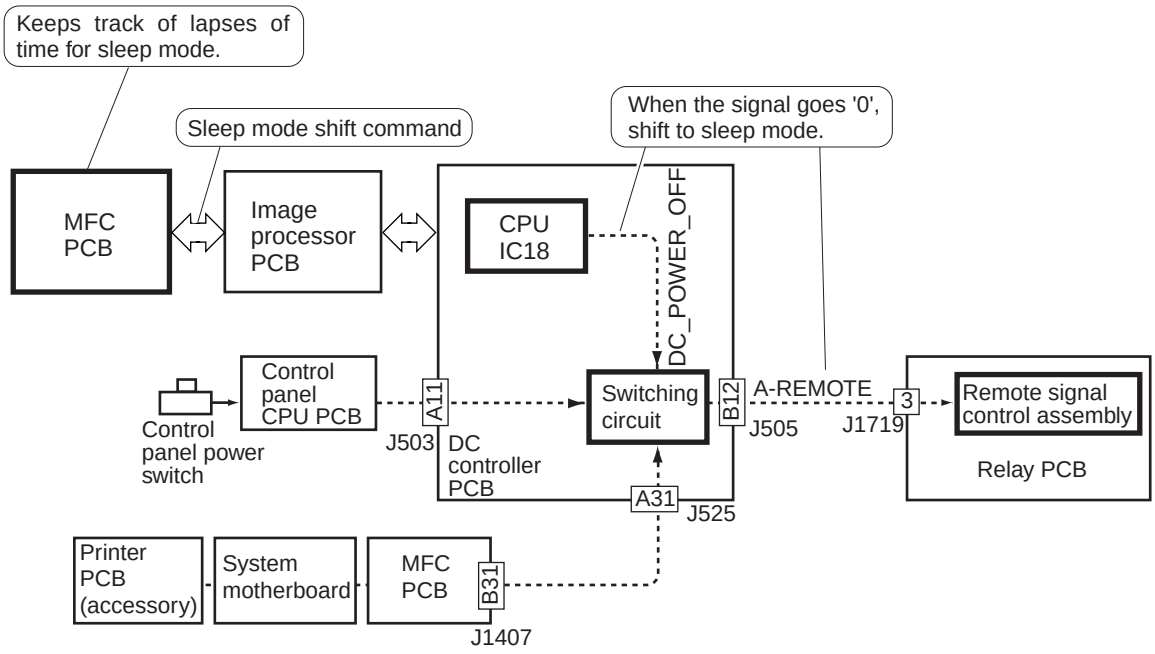


Figure 9-602 Shift to Sleep Mode

Reference:

	100V/20A model	100V/15A model	120V model	230V model
Standby power consumption (Wh)	357	355	335	330
Sleep mode power consumption (Wh)	12	12	12	16

The heater switch is off, and printer mode is not available.

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b. Return to Standby

The copier returns to standby state in response to the control panel power switch or the signal from the printer PCB (accessory).

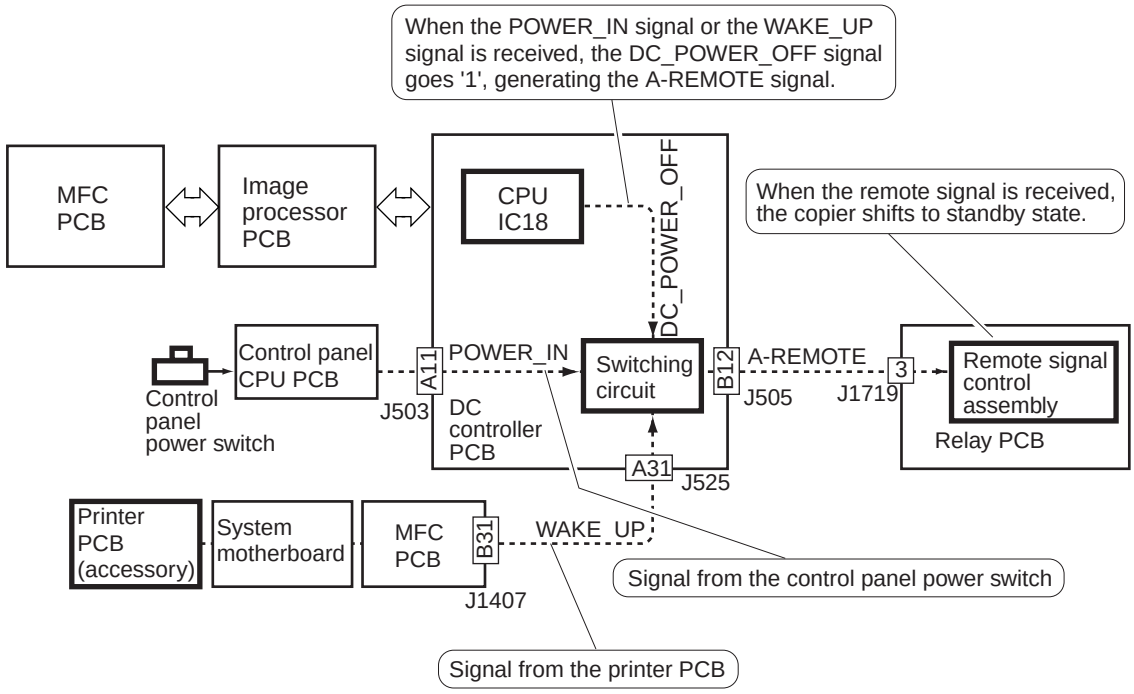


Figure 9-603 Return to Standby

B. Low Power mode

In low power mode, the power to the fixing heater in standby is cut to reduce power consumption during standby.

Related User Mode

Changing the shift time to low power consumption mode	10, 15*, 20, 30, 40, 50, 60, 90 min; 2, 3, 4 hr *Factory default.

Reference:

	100V/20A model	100V/15A model	120V model	230V model
Standby power consumption (Wh)	359	355	335	330
Low power consumption mode power consumption (Wh)	158	155	141	135

The heater switch is off, and printer mode is not available.

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C. Silence Mode

In silence mode, the laser scanner motor revolution is reduced (3/4) in standby state.
For details, see IV. "Controlling the Laser Scanner Motor" in Chapter 5.

Related User Mode

TIME UNTIL UNIT QUIETS DOWN	None; 1* to 9 min (1-min increments) *Factory setting.

D. Power Save Mode

In power save mode, the copier switches the control temperature for the fixing heater, thereby reducing the power consumption during standby state.
For details, see "Cortrolling the Fixing Tempereture "in Chapter 8.

Related User Mode

ENERGY SAVER MODE	-10%*, -25%, -50%, none *Factory default.

Reference:

		100V/20A model	100V/15A model	120V model	230V model
Standby power consumption (Wh)		359	355	335	330
Power save mode power consumption (Wh)	-10%	346	315	313	298
	-25%	311	269	270	255
	-50%	269	224	216	200

The heater switch is off, and printer mode is not available.

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VII . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Turn off the front cover switch or the power switch before sliding out the duplexing feeding unit or the fixing assembly.

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A. External Covers

[1] Front door
[2] Toner cartridge cover
[3] Upper right cover
[4] Manual feed tray cover
[5] Upper rear right cover
[6] Waste toner case cover
[7] Lower right cover
[8] Front lower right cover
[9] Front lower left cover

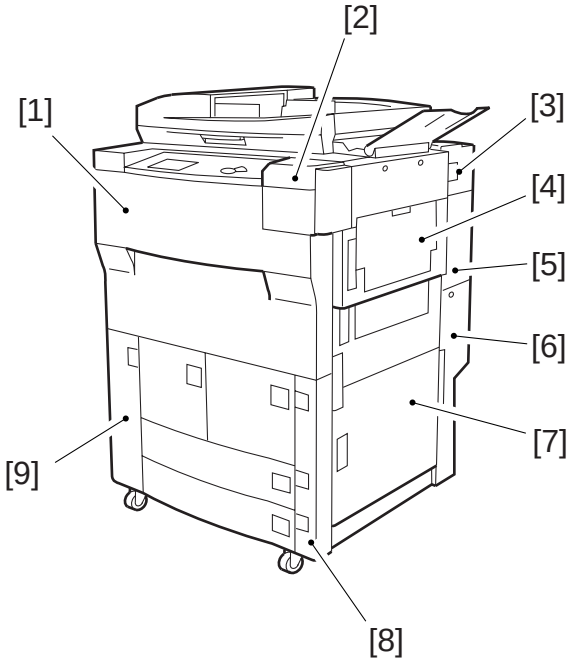


Figure 9-A701

[10] Rear cover
[11] Lower left cover
[12] Delivery tray
[13] Upper left cover

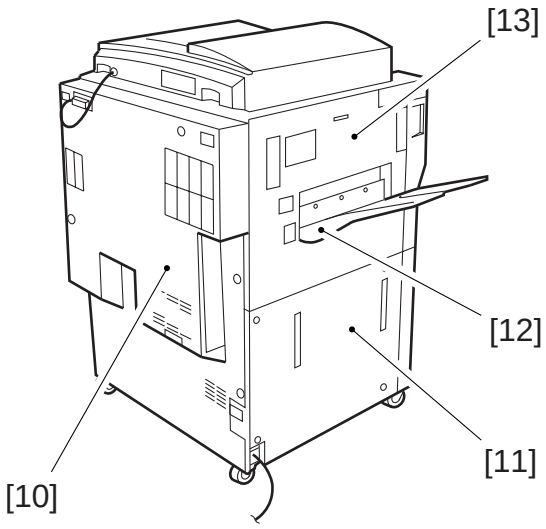


Figure 9-A702

Caution:
Do not remove the cover shown in the figure.
If removed and mounted again, it will displace the ADF, adversely affecting images.

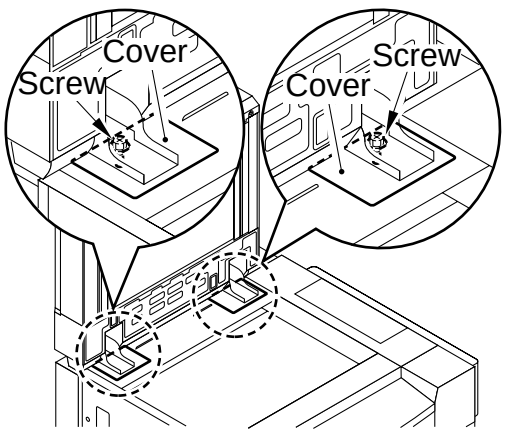


Figure 9-A703

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[14] Inside upper cover
[15] Inside cover (process unit)
[16] Inside cover (primary)
[17] Inside cover (pre-transfer)
[18] Inside cover (lower right)

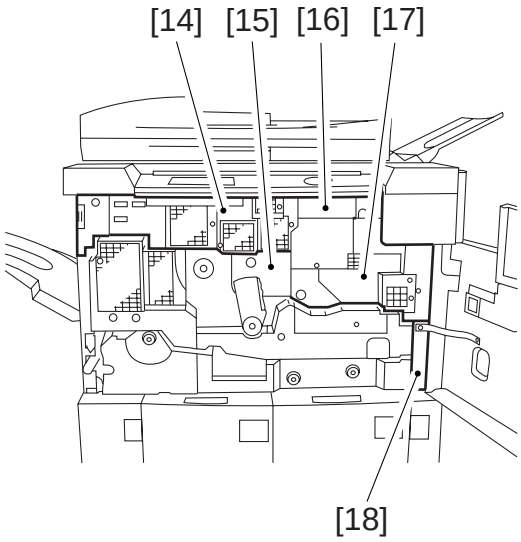


Figure 9-A704

Remove the covers as necessary when cleaning, inspecting, or repairing the inside of the machine.

Those covers that may be detached by merely removing their mounting screws are omitted from the discussions.

1. Removing the Front Door

1) Open the front door, and remove the mounting screw [2] from the door tape [1].
2) Open the toner cartridge cover [3], and remove the hinge pin [4] upward from the front door.
3) Pull out the front door upward at an angle.

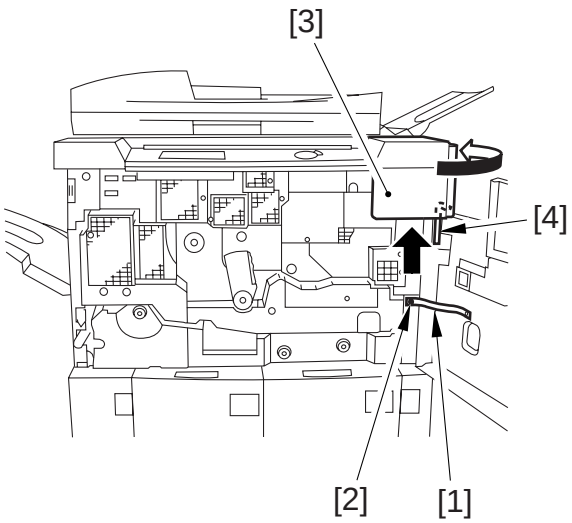


Figure 9-A705

2. Removing the Inside Upper Cover

1) Open the front door, and shift the fixing/feeding assembly lever [1]; then, slide out the fixing/feeding unit [2].
2) Remove the four mounting screws [3], and detach the inside cover [4] (process unit).
3) Remove the three mounting screws [5], and detach the inside upper cover [6].

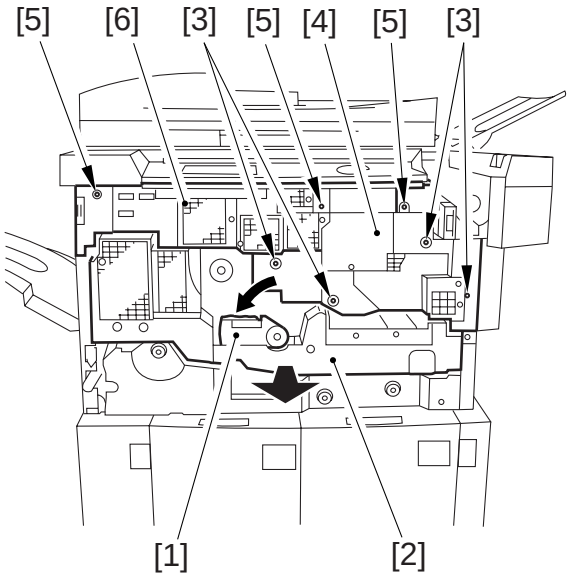


Figure 9-A706

3. Removing the Fixing/Feeding Unit Cover

1) Open the front door, and shift the fixing/feeding assembly lever to slide out the fixing/feeding unit.
2) Remove the mounting screw of the releasing lever; then, while pushing the releasing lever at the rear of the fixing/feeding unit (Figure 8-A502) to the front, detach it while the lever is up.
3) Remove the mounting screw [3], and detach the fixing knob [4].
4) Remove the mount screw [5], and detach the transfer separation charging assembly cover [6].
5) Remove the two mounting screws [7], and detach the fixing/feeding unit cover [8].

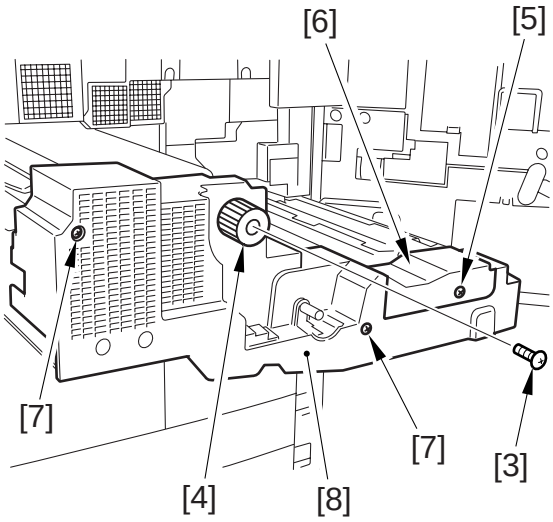


Figure 9-A707

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4. Removing the Rear Cover

1) Remove the eight mounting screws [1], and detach the rear cover [2].

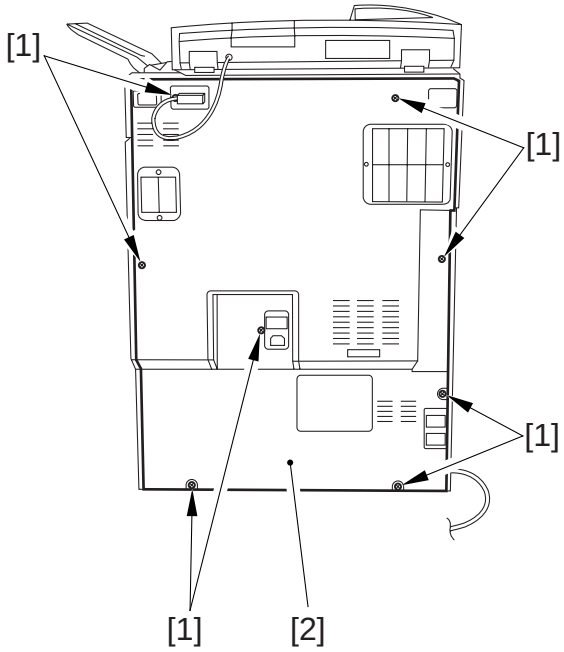


Figure 9-A708

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B. Control Panel

1. Removing the Control Panel

1) Remove the standard white plate. (See Figures 3-D511 through -D513.)
2) Remove the copyboard glass and the control panel middle cover.
3) Remove the two screws [1], and detach the face plate [2].

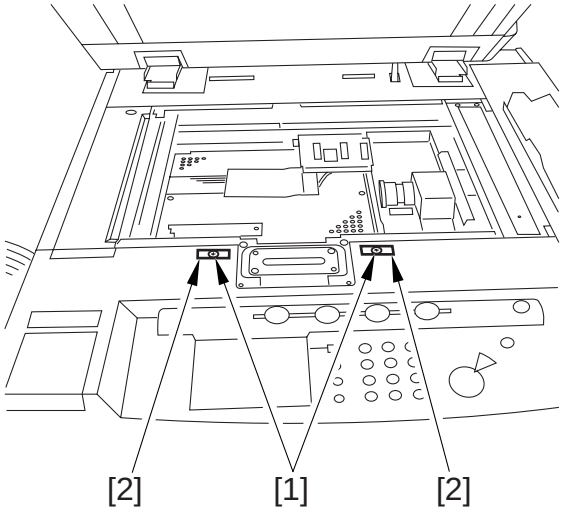


Figure 9-B701

4) Remove the two screws [3], and detach the delivery tray unit [4].

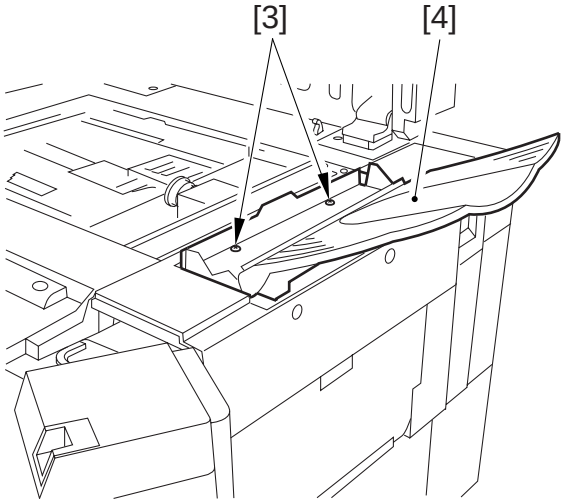


Figure 9-B702

5) Remove the two screws [5], and detach the upper right cover [7] while keeping the toner cartridge cover [6] open.

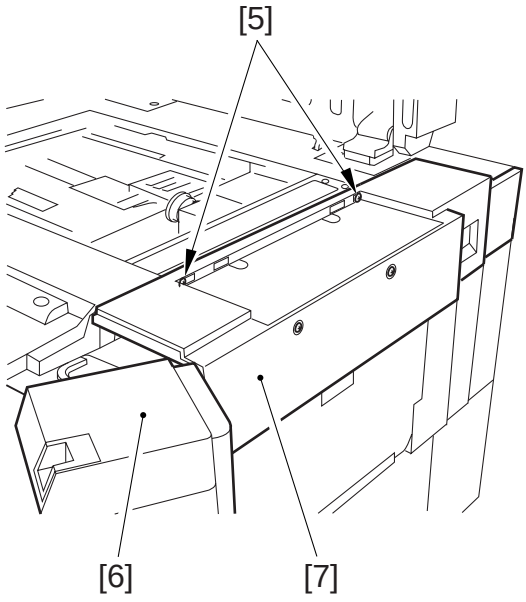


Figure 9-B703

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6) Remove the four screws [8] of the front cover, and disconnect the three connectors [9]; then, detach the control panel [10].

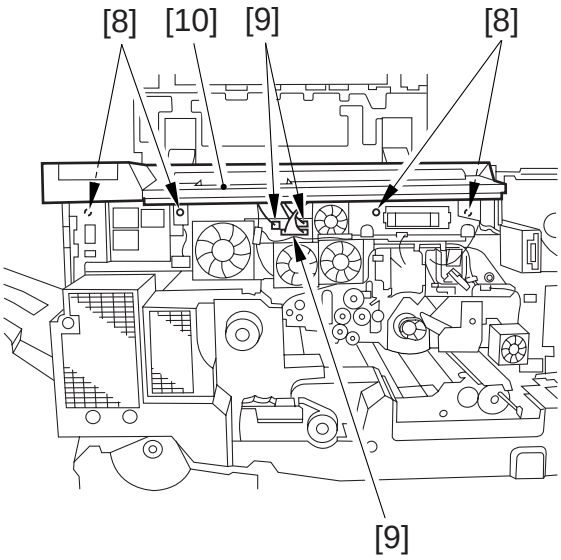


Figure 9-B704

2. Removing the Control Panel Controller (CPU) PCB and the Control Panel Inverter PCB

1) Remove the four mounting screws [1], and disconnect the eight connectors [2]; then, detach the control panel controller (CPU) PCB [3].

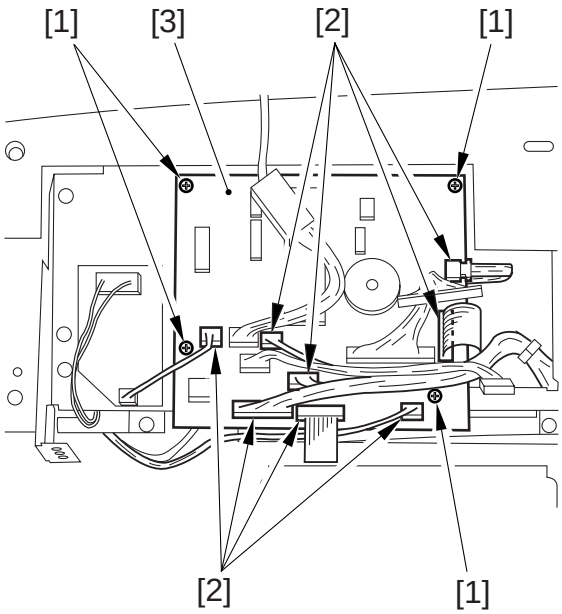


Figure 9-B705

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2) Remove the two mounting screws [4], and disconnect the two connectors [5]; then, detach the control panel inverter PCB [6].

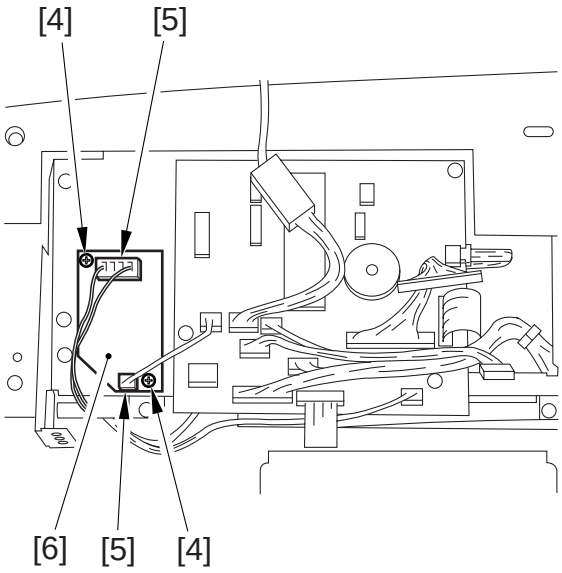


Figure 9-B706

3. Removing the Control Panel PCB and the LCD Panel

1) Remove the three screws [1], and detach the control panel lower cover [2].

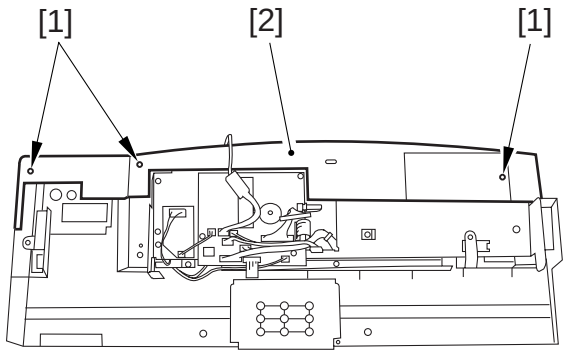


Figure 9-B707

2) Remove the CPU PCB.
3) Remove the eleven screws [3] and the two screws [4], and detach the CPU PCB.

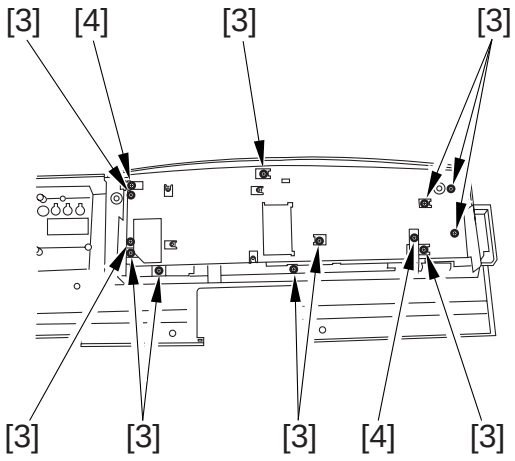


Figure 9-B708

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4) Remove the nine screws [5], and detach the control panel PCB [6]; then, remove the three screws [7], and detach the LCD panel [8].

Caution:
When mounting the control panel PCB or the LCD panel to the control panel, keep in mind that some locations need to be screwed together with the CPU PCB mounting plate (2 locations on the control panel PCB, 2 locations on the LCD panel).

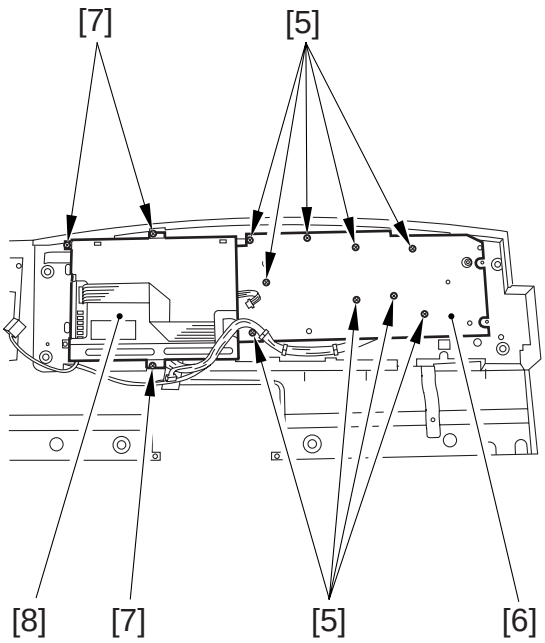


Figure 9-B709

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C. Fans

1. Removing the Primary Charging Assembly Fan

1) Open the front door.
2) Remove the inside cover (process unit).
3) Remove the inside upper cover.
4) Remove the two screws [1], and slide out the primary charging fan [2].

Caution:
When mounting the primary charging assembly fan, be sure that the direction of air current matches the marking indicated on the fan.

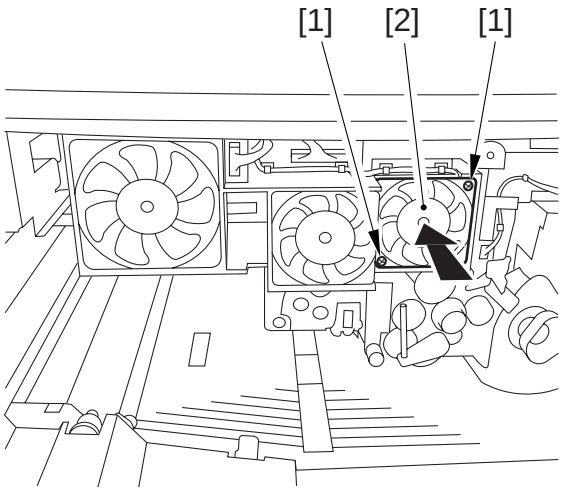


Figure 9-C701

5) Disconnect the connector [3] found on the back of the fan, and detach the primary charging assembly fan [2].

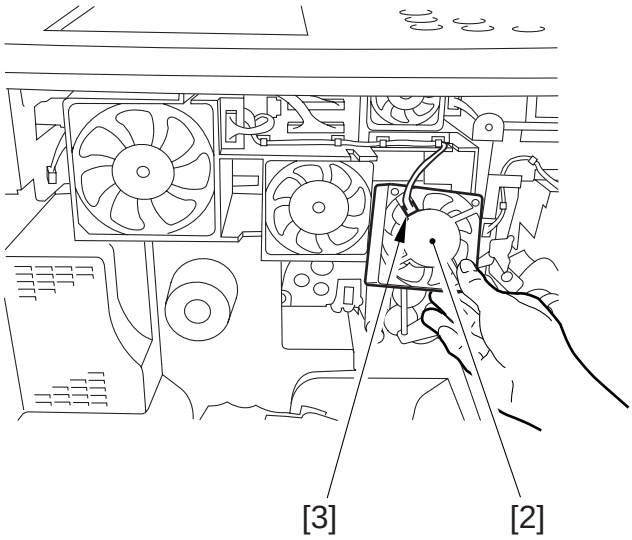


Figure 9-C702

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2. Removing the Fixing Heat Discharge Fan

1) Remove the rear cover.
2) Remove the four screws [1], and disconnect the connector [2]; then, slide out the fixing assembly heat discharge fan [3].

Caution:
When mounting the fixing heat discharge fan, be sure that the direction of air current match the marking indicated on the fan.

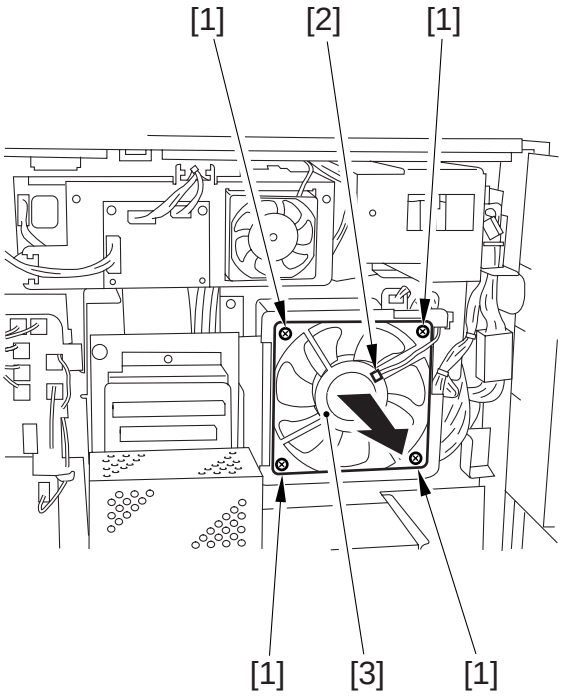


Figure 9-C703

3. Removing the Scanner Cooling Fan

1) Open the front door.
2) Remove the inside cover (process unit).
3) Remove the inside upper cover.
4) Remove the two screws [1], and slide out the scanner cooling fan [2].

Caution:
When mounting the scanner cooling fan, be sure that the direction of air current matches the marking indicated on the fan.

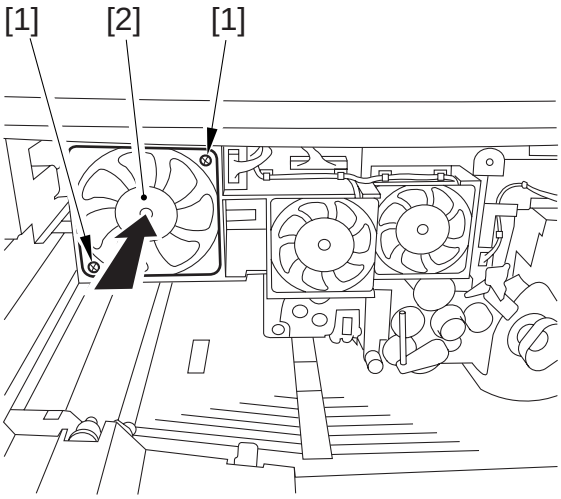


Figure 9-C704

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5) Disconnect the connector [3] found on the back of the fan, and detach the scanner cooling fan [2].

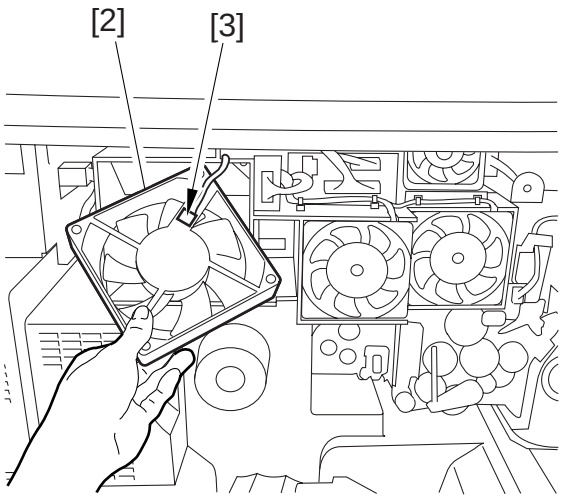


Figure 9-C705

4. Removing the Stream Reading Fan

1) Open the front door.
2) Remove the inside cover (process unit).
3) Remove the inside upper cover.
4) Remove the two screws [1], and take out the stream reading fan assembly [2].

Caution:
When mounting the stream reading fan, be sure that the direction of air current matches the marking indicated on the fan.

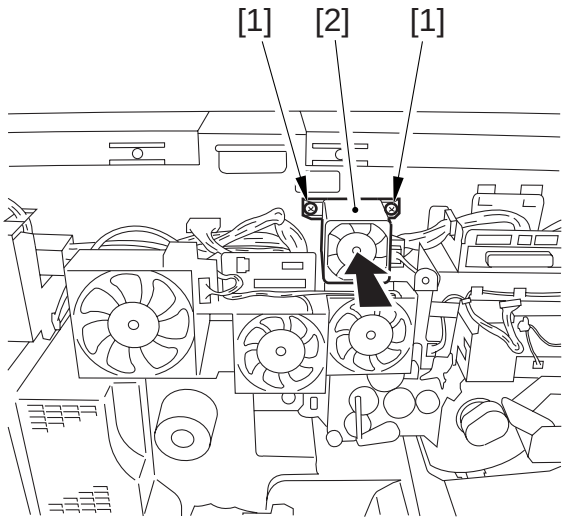


Figure 9-C706

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5) Disconnect the connector [3], and remove the two screws [4]; then, detach the stream reading fan [5].

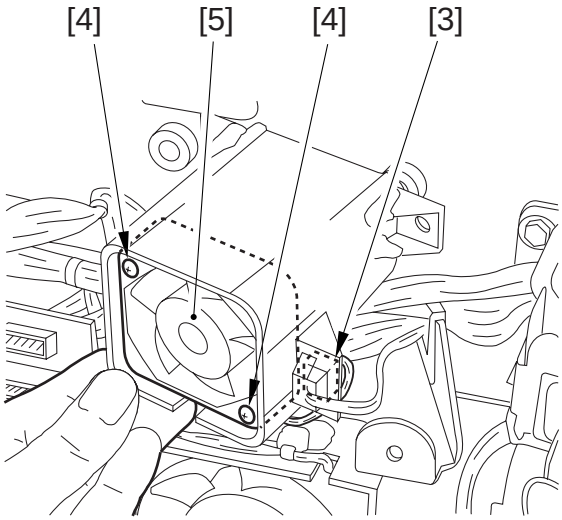


Figure 9-C707

5. Removing the Laser Cooling Fan

1) Remove the copyboard glass.
2) Remove the original sensor unit 1.
3) Remove the image processor cover, and detach the image processor PCB.
4) Remove the two screws [1], and disconnect the connector [2]; then, detach the laser cooling fan [3] together with its mount.

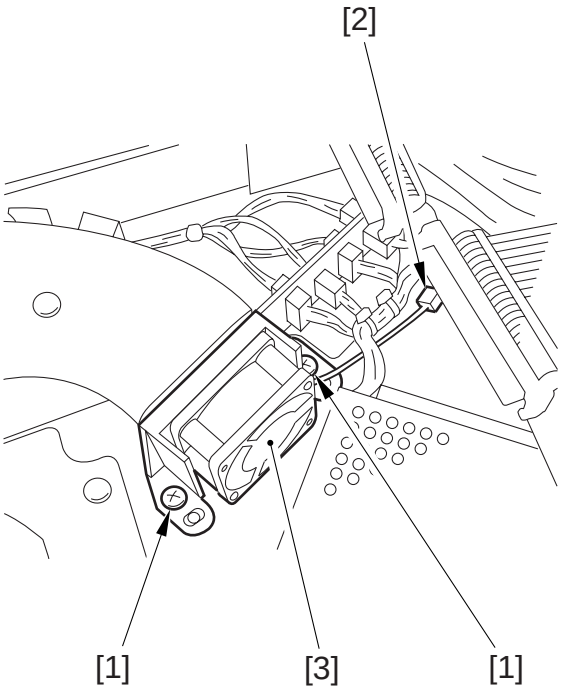


Figure 9-C708

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5) Remove the two screws [4], and detach the laser cooling fan [3].

Caution:
When mounting the laser cooling fan, be sure that the direction of air current matches the marking indicated on the fan.

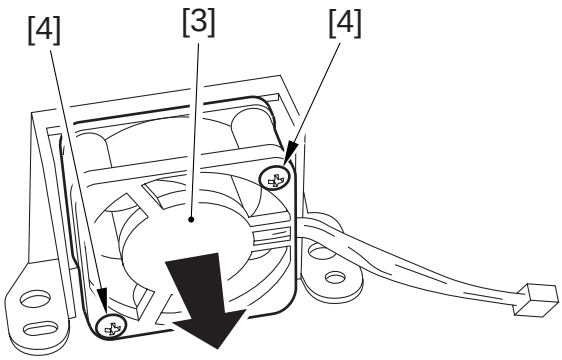


Figure 9-C709

6. Removing the De-Curling Fan

1) Open the front door.
2) Slide out the fixing/feeding unit.
3) Remove the fixing/feeding unit cover.
4) Disconnect the two connectors [1], and remove the four screws [2]; then, detach the fixing motor mount [3] together with the fixing motor.

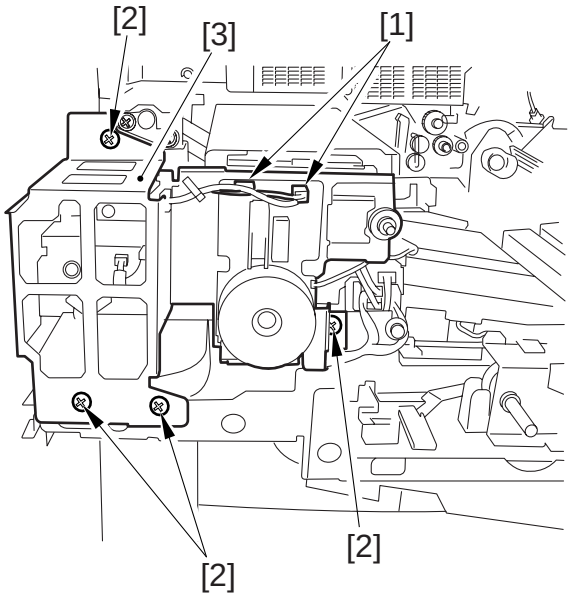


Figure 9-C710

5) Remove the two screws [4], and disconnect the connector [5]; then, detach the delivery speed switching clutch [6].

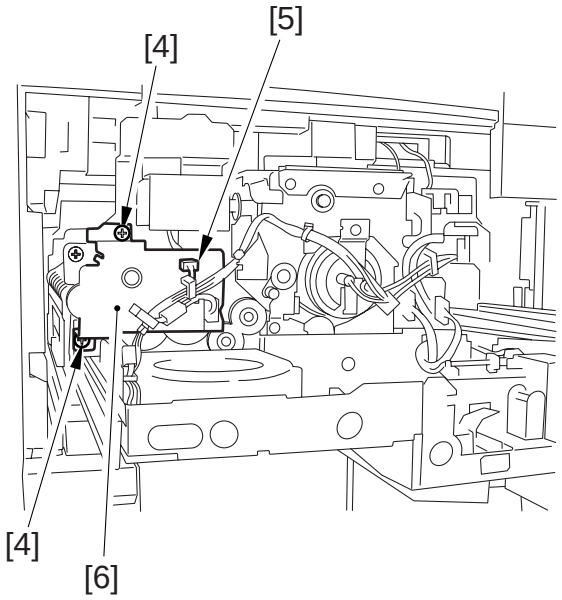


Figure 9-C711

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6) Disconnect the connector [7], and remove the two screws [8]; then, detach the de-curling fan [9].

Caution:
When mounting the de-curling fan, be sure that the direction of air current matches the marking indicated on the fan.

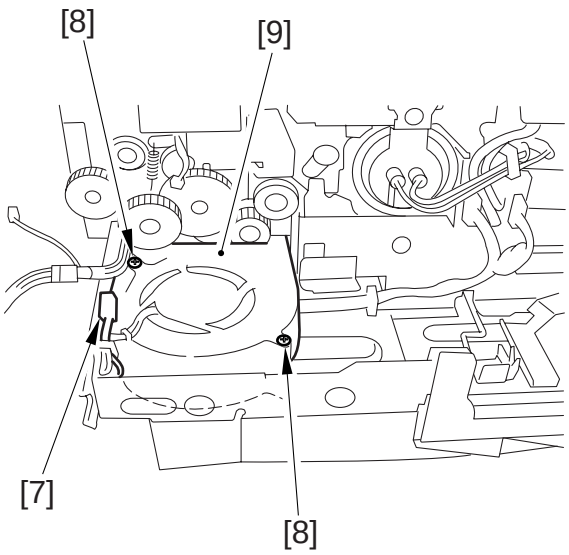


Figure 9-C712

7. Removing the Feeding Fan

1) Open the front door.
2) Slide out the fixing/feeding unit.
3) Remove the fixing/feeding unit cover.
4) Take out the feeding assembly.
5) Remove the feeding roller and the feeding belt.
6) Remove the four screws [1], and detach the feeding duct [2].

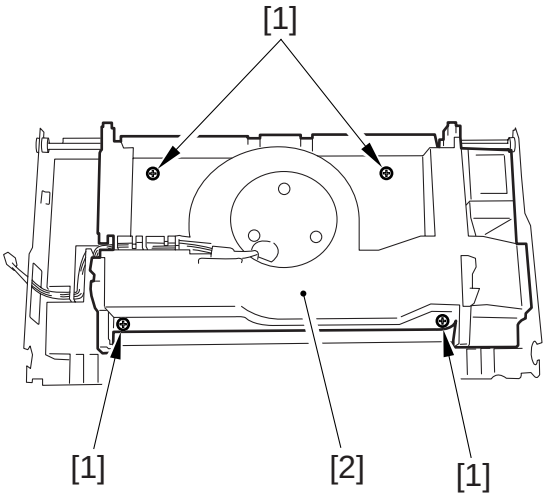


Figure 9-C713

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7) Remove the three screws [3], and detach the feeding fan [4].

Caution:
When mounting the feeding fan, be sure that the direction of air current matches the marking indicated on the fan.

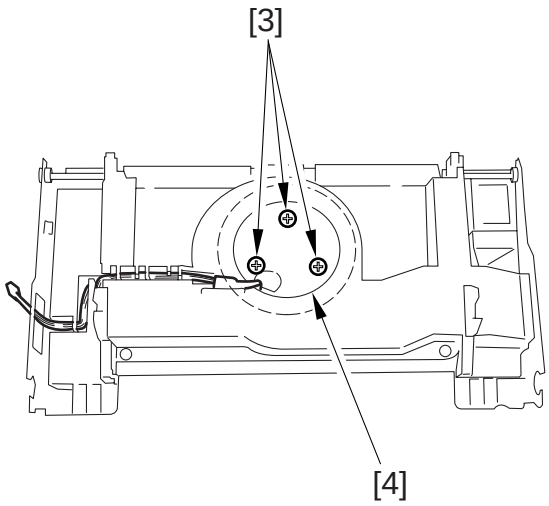


Figure 9-C714

8. Removing the Drum Fan

1) Remove the rear cover.
2) Remove the high-voltage transformer (DC).
3) Remove the two screws [1], and disconnect the connector [2]; then, detach the drum fan unit [3].

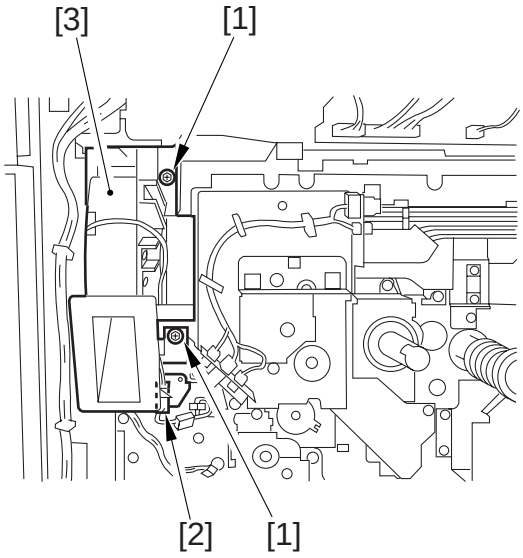


Figure 9-C715

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4) Disconnect the connector [4], and remove the three screws [5]; then, detach the drum fan [6].

Caution:
When mounting the drum fan, be sure that the direction of air current matches the marking indicated on the fan.

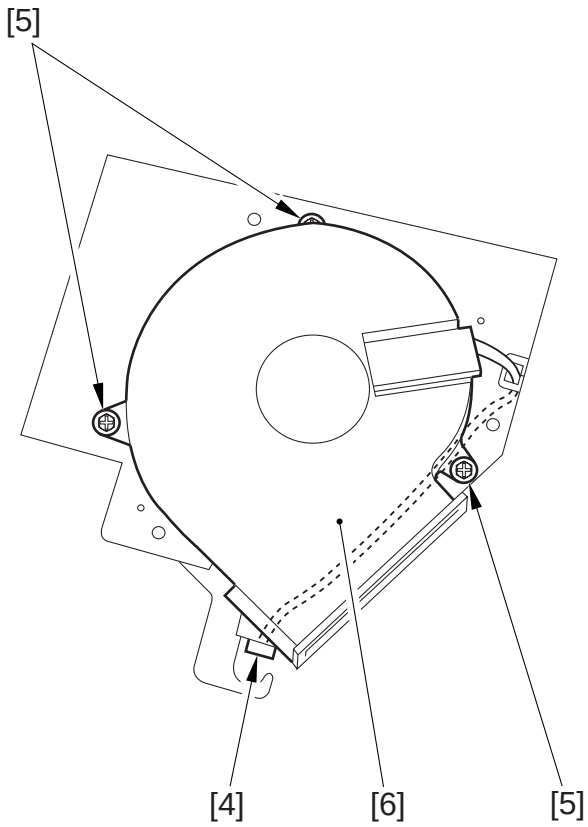


Figure 9-C716

9. Removing the Inverter Cooling Fan

1) Remove the rear cover.
2) Remove the two screws [1], and slide out the inverter fan [2].

Caution:
When mounting the inverter cooling fan, be sure that the direction of air current matches the marking indicated on the fan.

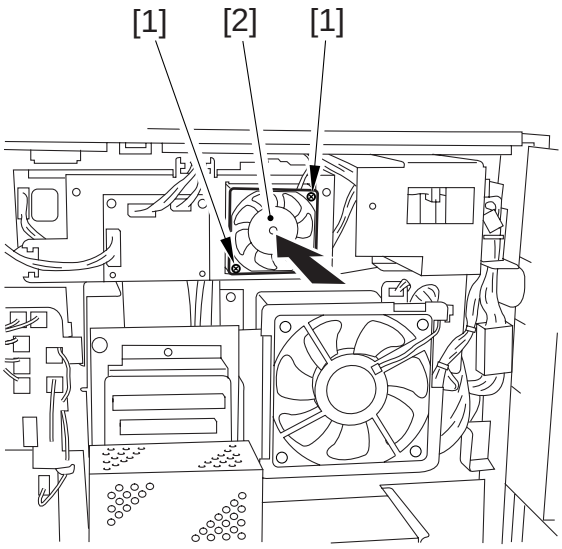


Figure 9-C717

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3) Disconnect the connector [3], and detach the inverter cooling fan [2].

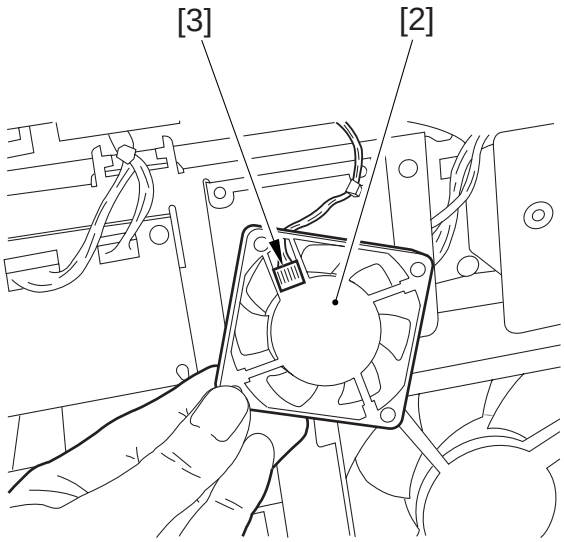


Figure 9-C718

10. Removing the Pre-Transfer Charging Assembly Fan

1) Open the front door.
2) Remove the inside cover (process unit).
3) Remove the two screws [1], and disconnect the two connectors [2]; then, detach the fan motor [3].

Caution:
When mounting the pre-transfer charging fan, be sure that the direction of air current matches the marking indicated on the fan.

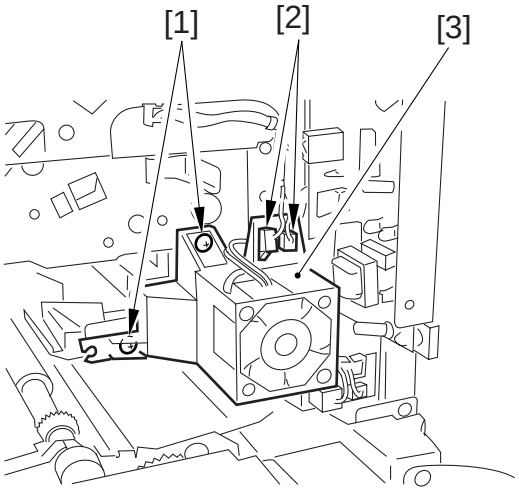


Figure 9-C719

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4) Disconnect the connector [4], and remove the two screws [5]; then, detach the pre-transfer charging assembly fan [6].

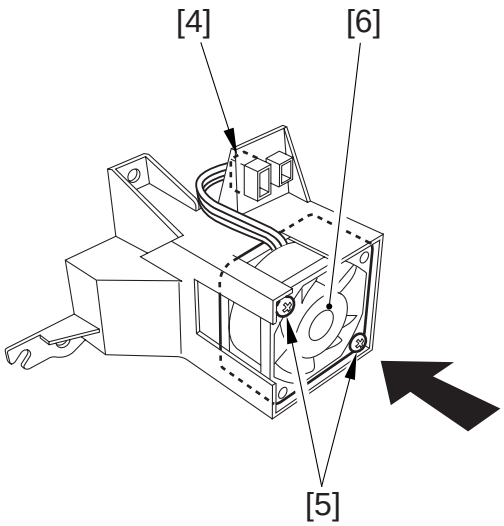


Figure 9-C720

11. Removing the Power Supply Cooling Fan 1

1) Remove the lower left cover.
2) Remove the power supply unit.
3) Remove the three screws [1], and detach the fan mount [2].

Caution:
When mounting the power supply cooling fan 1, be sure that the direction of air current matches the marking indicated on the fan.

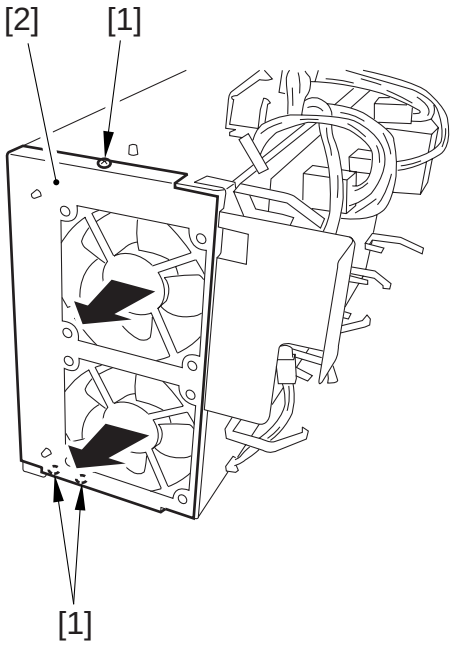


Figure 9-C721

4) Remove the two screws [3], and disconnect the conector [4]; then, detach the power supply cooling fan 1 [5].

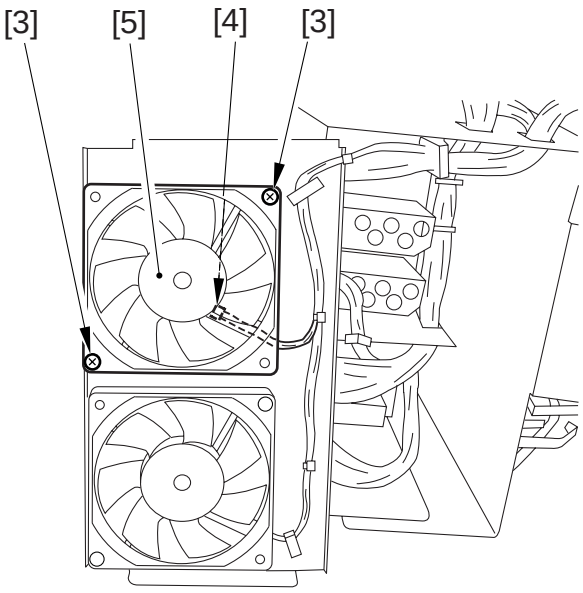


Figure 9-C722

12. Removing the Power Supply Cooling Fan 2

1) Remove the lower left cover.
2) Remove the power supply unit.
3) Remove the three screws [1], and detach the fan mount [2]. (See Figure 9-C721.)
4) Remove the two screws [3], and disconnect the connector [4]; then, detach the power supply cooling fan 2 [5].

Caution:
When mounting the power supply cooling fan 2, be sure that the direction of air current matches the marking on the fan.

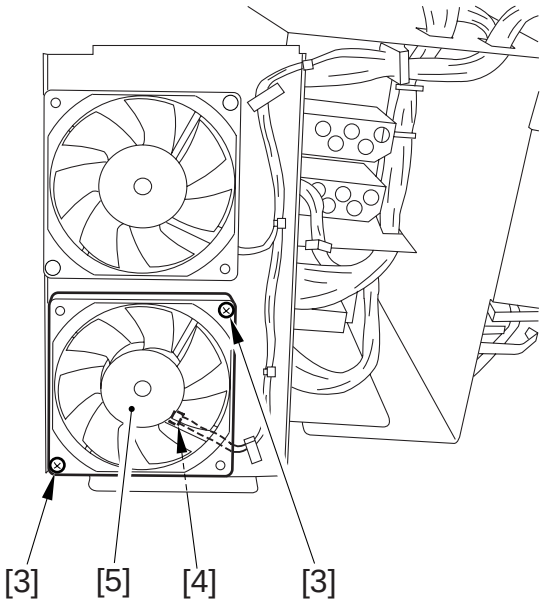


Figure 9-C723

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13. Removing the Separation Fan

1) Open the front door.
2) Slide out the fixing/feeding unit.
3) Remove the two screws [1], and detach the fixing/feeding lower cover [2].

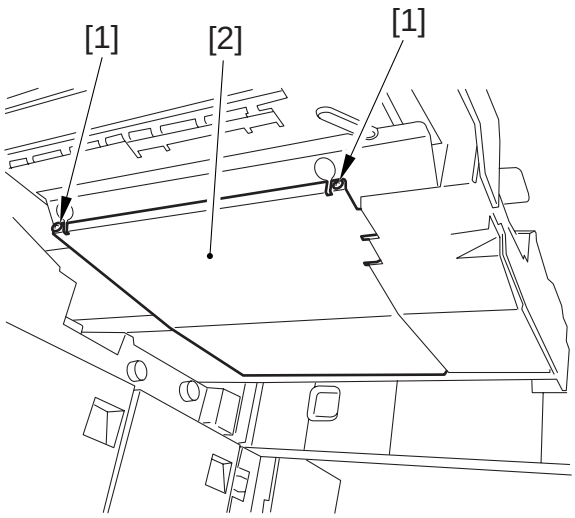


Figure 9-C724

4) Disconnect the connector [3], and remove the five screws [4]; then, detach the separation fan unit [5].

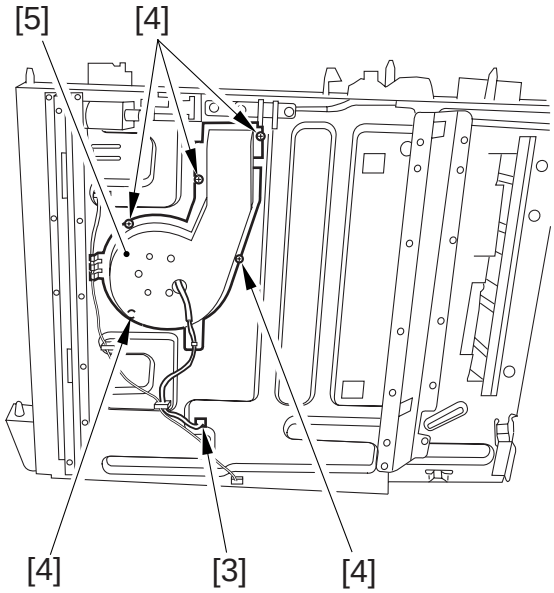


Figure 9-C725

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5) Remove the three screws [6], and detach the separation fan [7].

Caution:
When mounting the separation fan, be sure that the direction of air current matches the marking indicated on the fan.

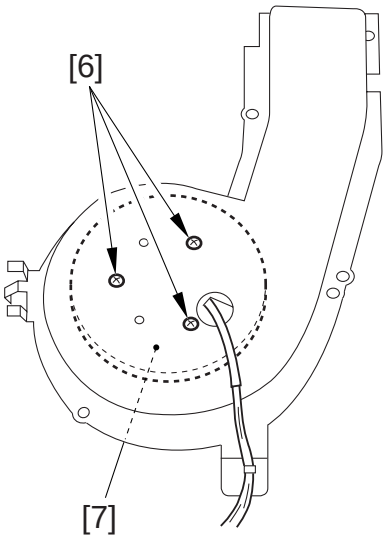


Figure 9-C726

14. Removing the Laser Scanner Fan

1) Open the front door.
2) Remove the inside cover (process unit).
3) Remove the inside upper cover.
4) Remove the two screws [1], and slide out the laser scanner fan [2].

Caution:
When mounting the laser scanner fan, be sure that the direction of air current matches the marking on the fan.

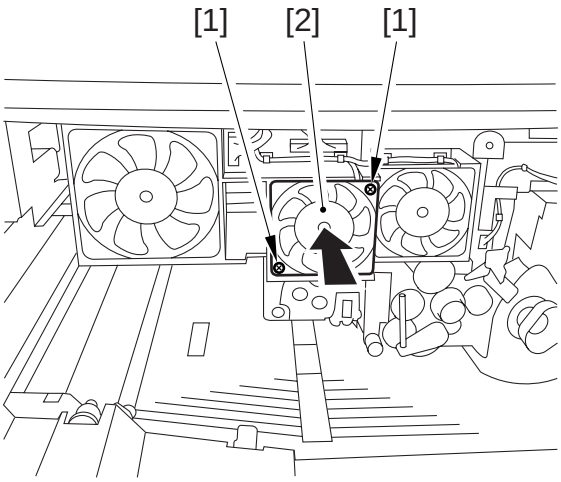


Figure 9-C727

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5) Disconnect the connector [3] found on the back of the fan; then, detach the laser scanner fan [2].

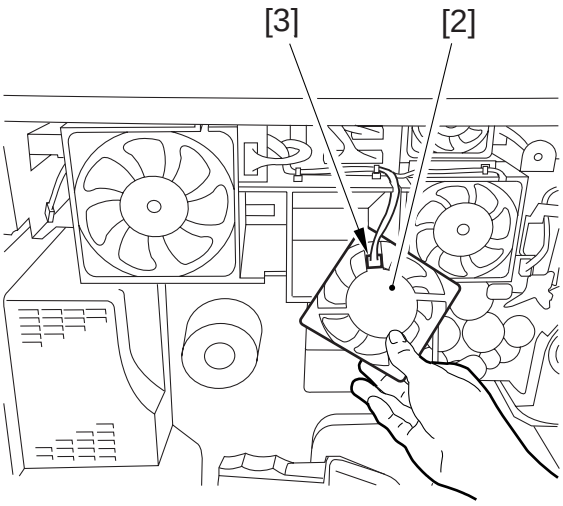


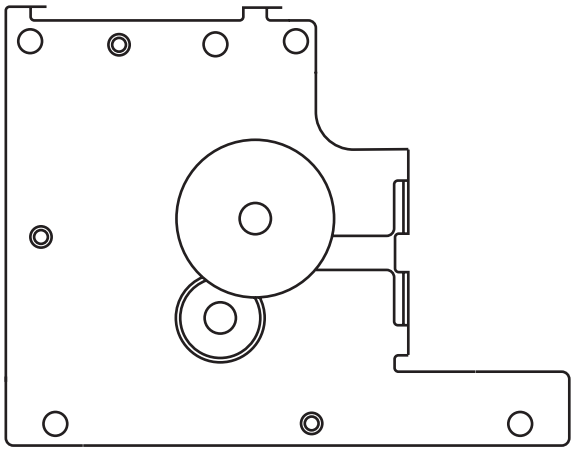
Figure 9-C728

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D. Drive Assembly

1. Removing the Left Pickup Drive Assembly

Construction



1) Remove the rear cover.
2) Open the system box assembly. (See Figure 4-D401.)
3) Remove the high-voltage transformer (AC). (See Figure 9-H701.)
4) While detaching the belt [1], remove the three screws [2], and detach the left pickup drive assembly [3].

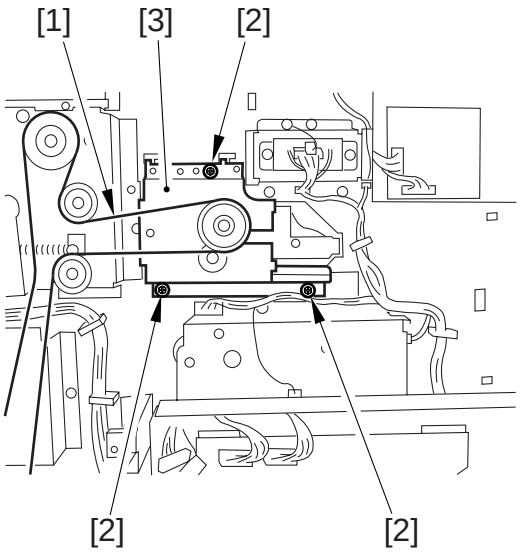
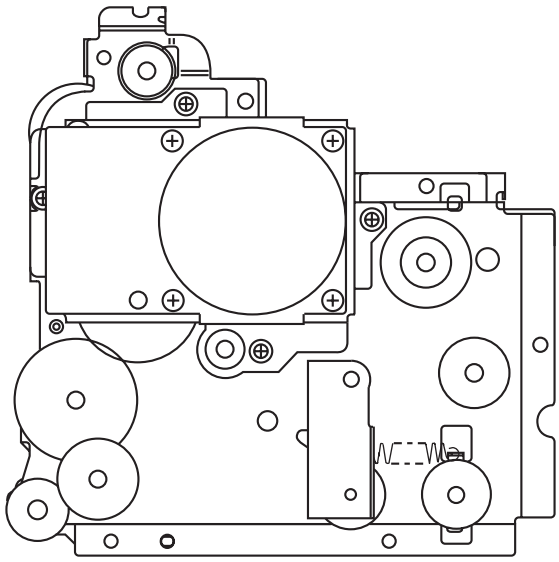


Figure 9-D701

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2. Removing the Pickup Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC). (See Figure 9-I701.)
3) Remove the flywheel.
4) Remove the drum gear.
5) Remove the waste toner pipe.
6) Remove the two screws [1], and loosen the harness guide [2]; disconnect the two connectors [3], and remove the six screws [4]; then, detach the pickup drive assembly [5].

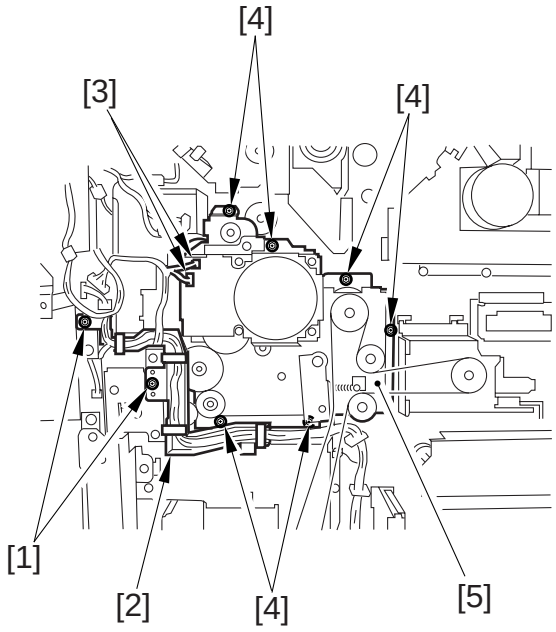
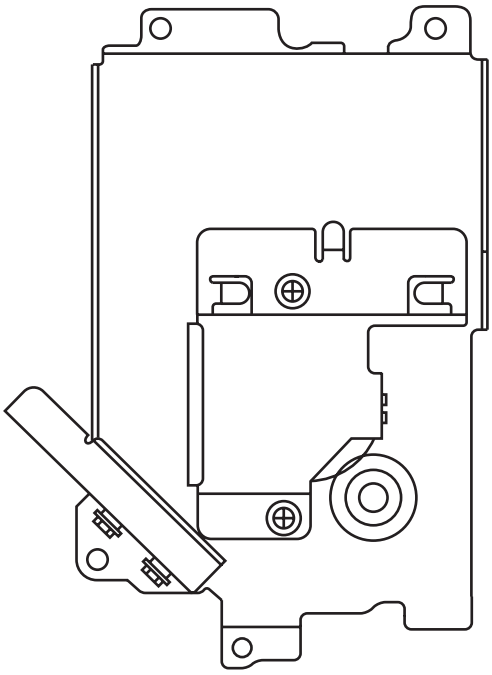


Figure 9-D702

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3. Removing the Developing Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC). (See Figure 9-I701.)
3) Remove the flywheel. (See Figure 9-D712.)
4) Remove the drum gear. (See Figure 9-D713.)
5) Remove the waste toner pipe. (See Figure 9-D715.)
6) Remove the drum drive assembly. (Figure 9-D717.)
7) Remove the waste toner drive assembly. (See Figure 9-D707.)
8) Remove the two screws [1], and disconnect the connector [2]; then, detach the drum fan [3].

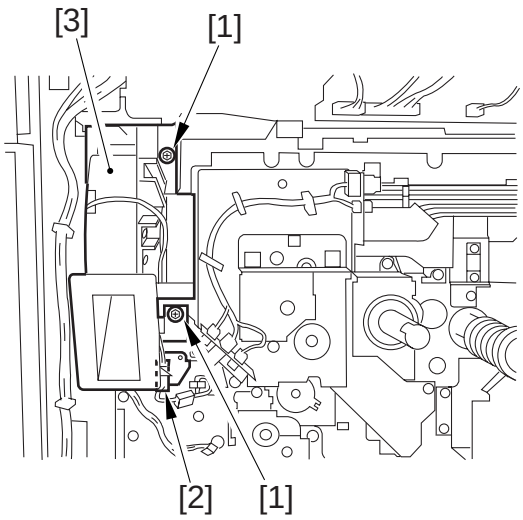


Figure 9-D703

9) Disconnect the two connectors [4], and remove the four screws [5]; then, detach the developing drive assembly [6].

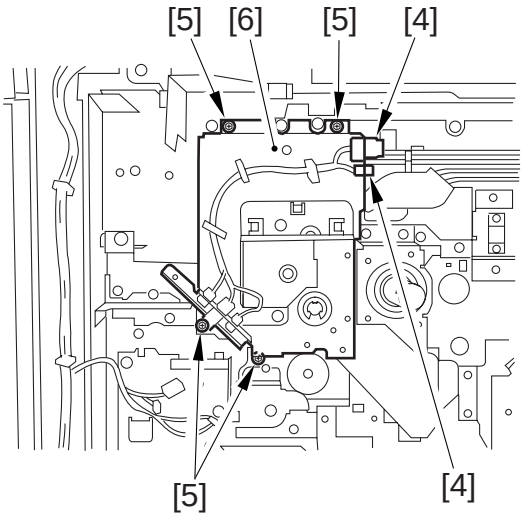
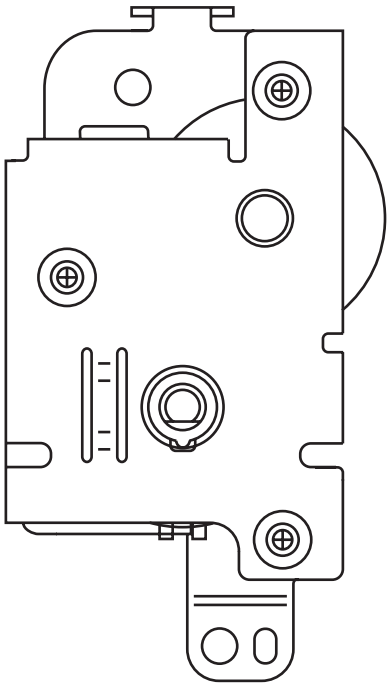


Figure 9-D704

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4. Removing the Vertical Path Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the waste toner case.
3) Remove the two screws [1], and detach the harness guide [2].

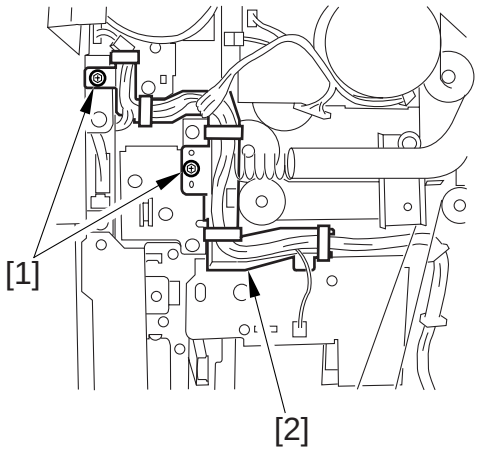


Figure 9-D705

4) Disconnect the connector [3], and remove the two screws [4]; then, detach the vertical path drive assembly [5].

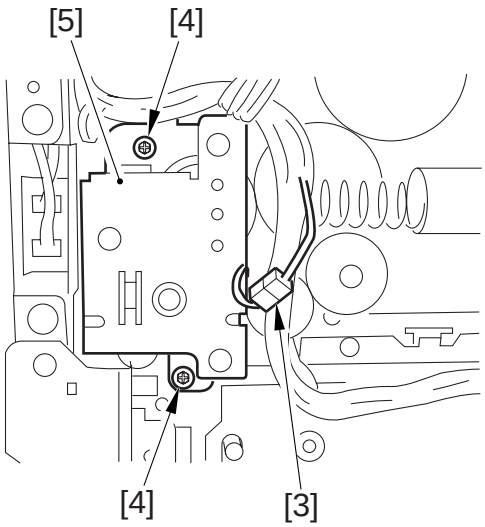
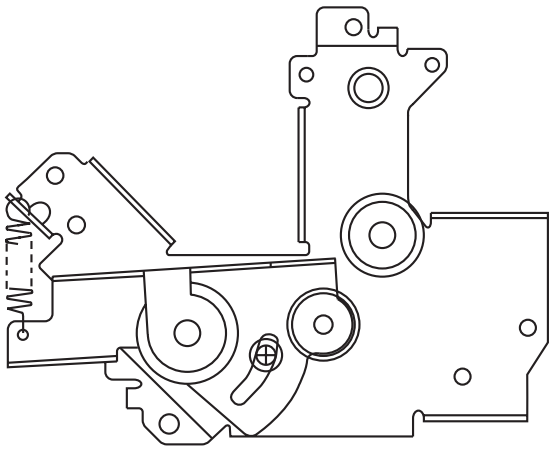


Figure 9-D706

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5. Removing the Waste Toner Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC).
3) Remove the flywheel.
4) Remove the drum gear.
5) Remove the waste toner pipe.
6) Remove the drum drive assembly.
7) Remove the six screws [1], and detach the waste toner drive assembly [2].

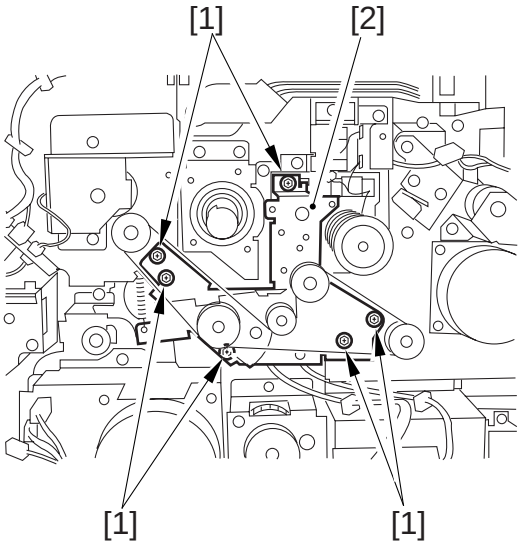
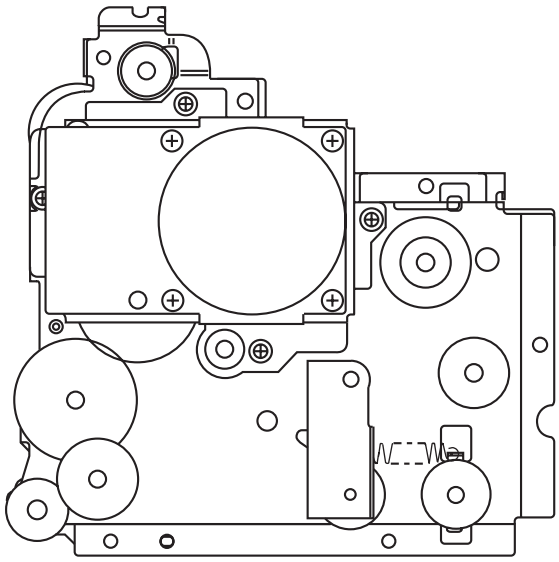


Figure 9-D707

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6. Removing the Multifeeder Pickup Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC).
3) Loosen the mounting screw on the rear fixing plate of the registration roller assembly.
4) Remove the four screws [1], and disconnect the four connectors [2]; then, detach the multifeeder pickup drive assembly [3].

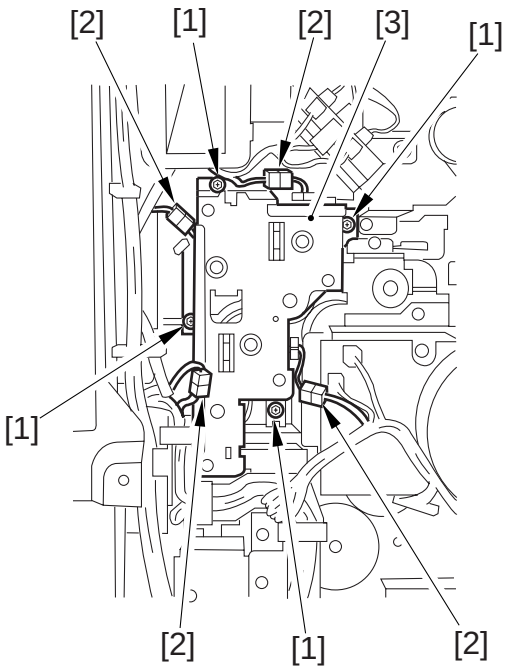
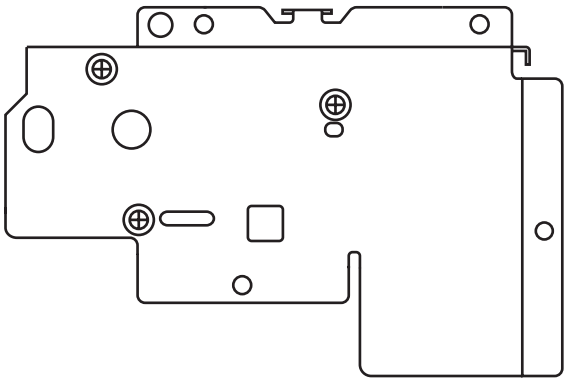


Figure 9-D708

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7. Removing the Lifter Drive Assembly (right deck)

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC).
3) Remove the flywheel.
4) Remove the drum gear.
5) Remove the waste toner pipe.
6) Remove the screw, and loosen the harness guide [1]; disconnect the two connectors [2], and remove the four screws [3]; then, detach the lifter drive assembly (for the right deck) [4].

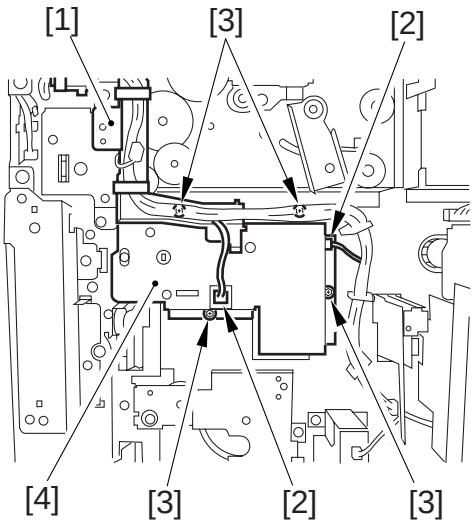
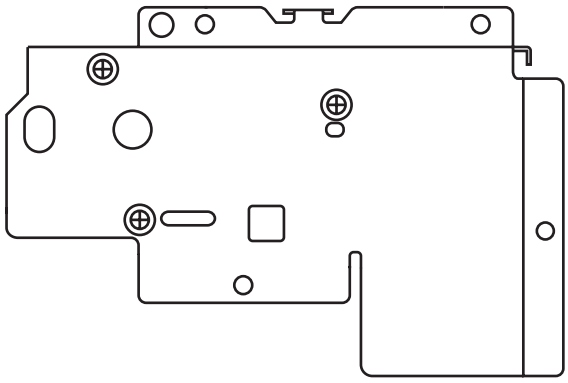


Figure 9-D709

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8. Removing the Lifter Drive Assembly (for the left deck)

Construction



1) Remove the rear cover.
2) Open the system box assembly.
3) Remove the DC controller assembly.
4) Disconnect the three connectors [1], and remove the four screws [2]; then, detach the lifter drive assembly (for the left deck) [3].

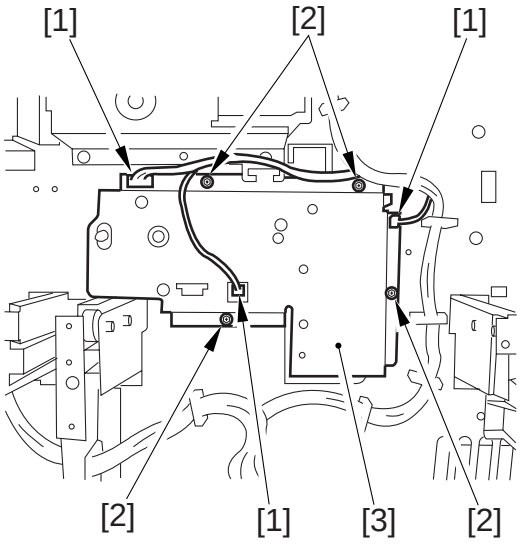
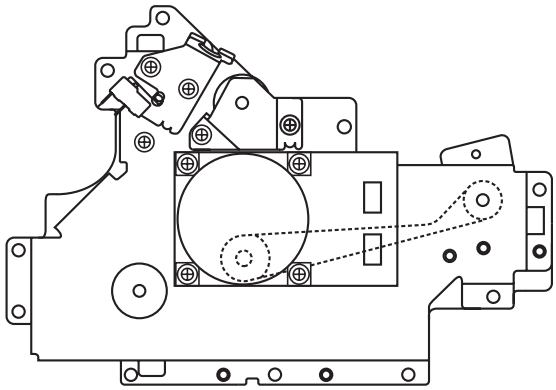


Figure 9-D710

9. Removing the Main Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC). (See Figure 9-I701.)
3) Remove the flywheel. (See Figure 9-D712.)
4) Remove the drum gear. (see Figure 9-D713.)
5) Remove the waste toner pipe. (See Figure 9-D715.)
6) Remove the drum drive assembly. (See Figure 9-D717.)
7) Remove the waste toner drive assembly. (See Figure 9-D707.)
8) Disconnect the two connectors [1], and remove the nine screws [2]; then, detach the main drive assembly [3].

Caution:
When mounting the main drive assembly, be sure to slide out the fixing/feeding assembly in advance. (A coupling and a spring are mounted to the back of the main drive assembly. If the fixing/feeding assembly is inside, the action of the spring will hinder mounting work.)

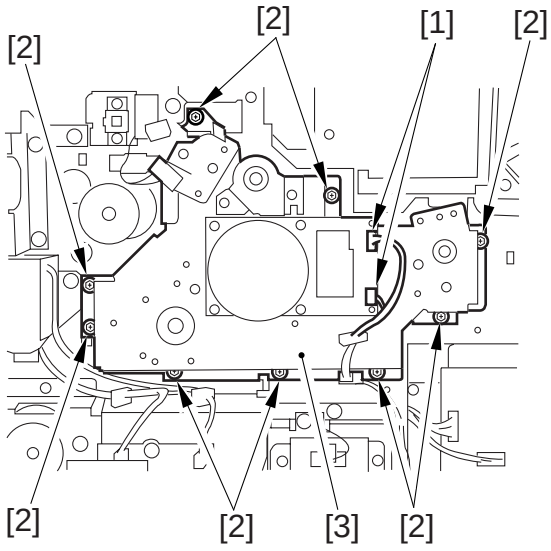
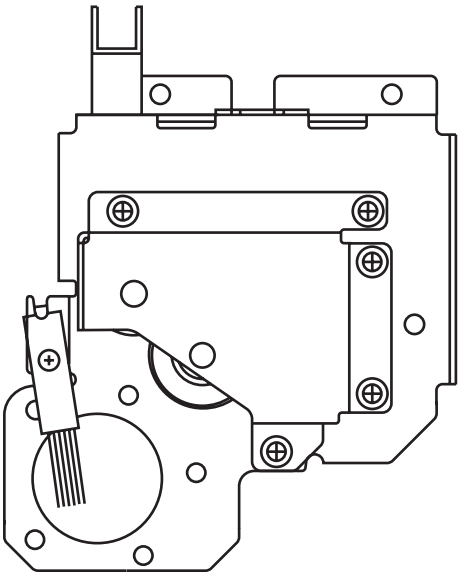


Figure 9-D711

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10. Removing the Drum Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC).
3) Open the system box assembly. (See Figure 4-D401.)
4) Remove the high-voltage transformer (AC). (See Figure 9-H701.)
5) Remove the two screws [1], and detach the flywheel [2].

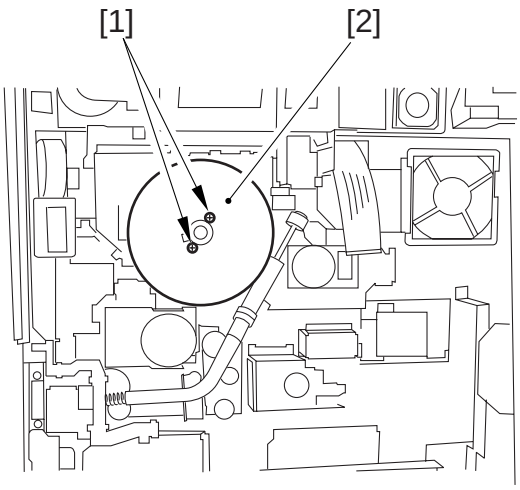


Figure 9-D712

6) Loosen the two screws [3], and remove the binding screw [4] (w/ a spring); then, detach the gear [5] of the drum shaft.

Caution:
When removing the screw from the drum shaft gear, pay attention to the direction of rotation of the gear. (Be sure to turn it counterclockwise.)

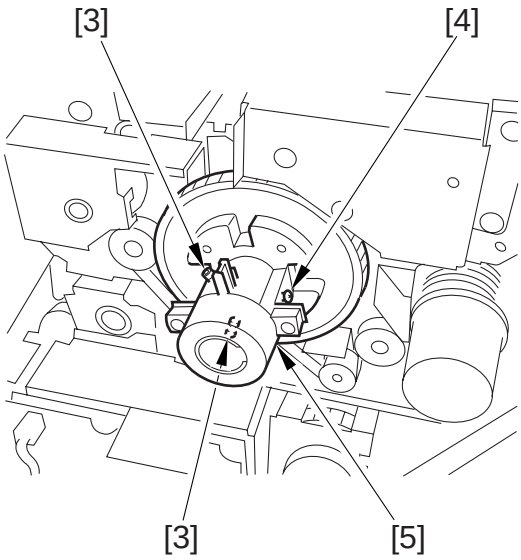


Figure 9-D713

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7) Remove the waste toner case, remove the five screws [6], and disconnect the four connectors [7]; then, remove the waste toner case mount [8].

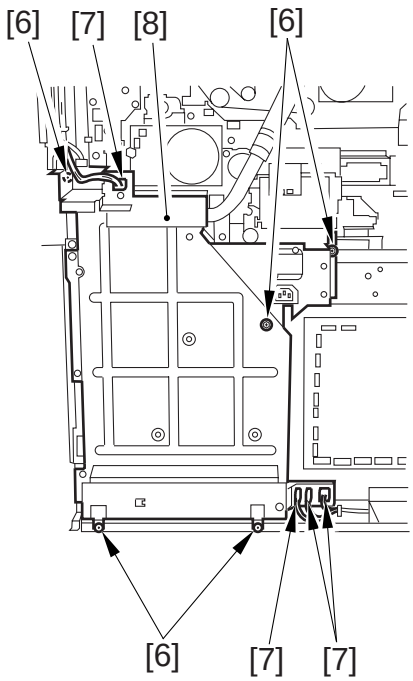


Figure 9-D714

8) Remove the E-ring [10] from the tip of the waste toner pipe [9]; slide up the bushing [11], and remove the two screws [12]; then, remove the waste toner pipe [9].

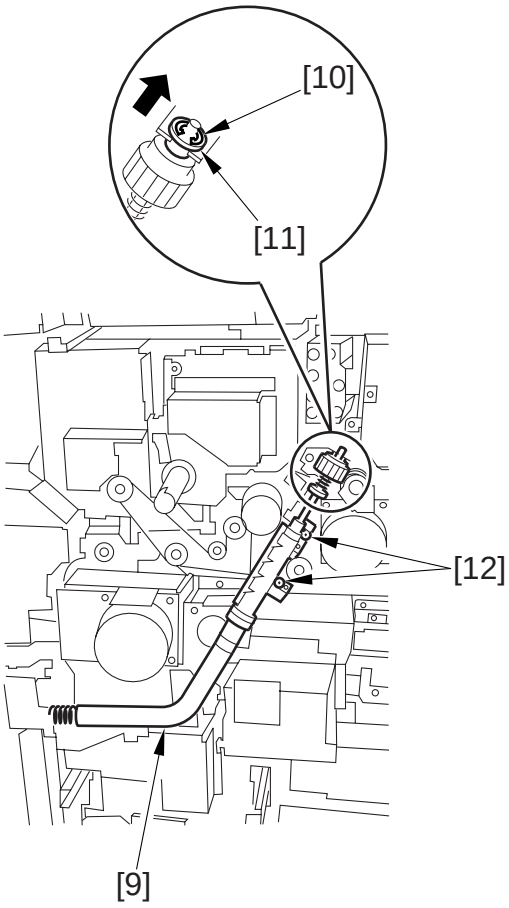


Figure 9-D715

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9) Remove the screw [13], and detach the drum cleaning pipe cover [14].

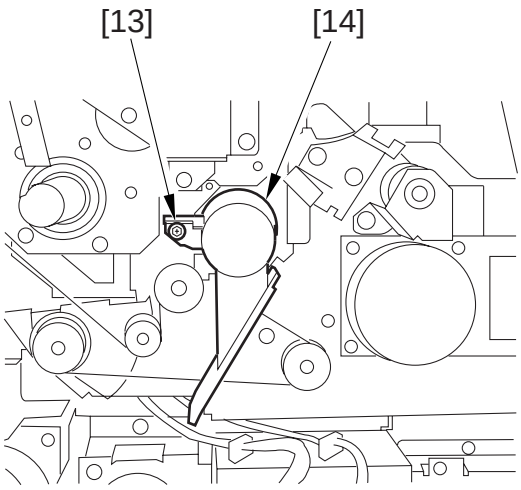


Figure 9-D716

10) Disconnect the four connectors [15], and remove the five screws [16]; then, detach the drum drive assembly [17].

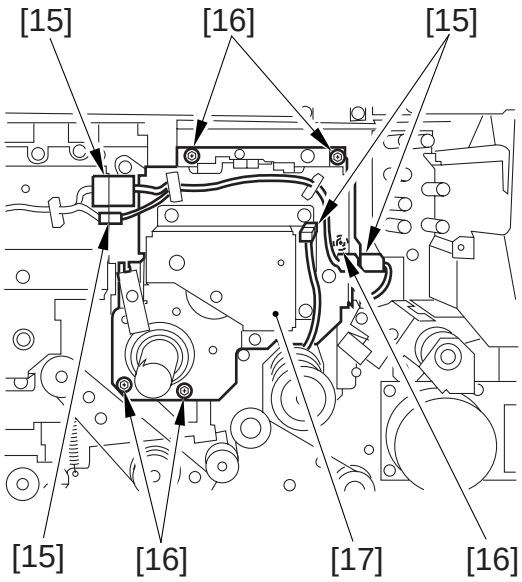
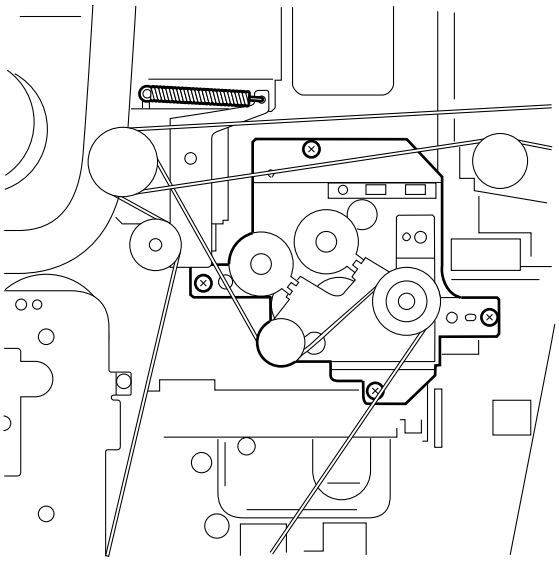


Figure 9-D717

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11. Removing the Cassette Pickup Drive Assembly

Construction



1) Remove the rear cover.
2) Remove the high-voltage transformer (DC).
3) Remove the flywheel.
4) Remove the drum gear.
5) Remove the waste toner pipe.
6) Remove the cassette pickup assembly (upper, lower). (See Figure 7-B801.)
7) Remove the five screws [1], and detach the pickup drive assembly [2].

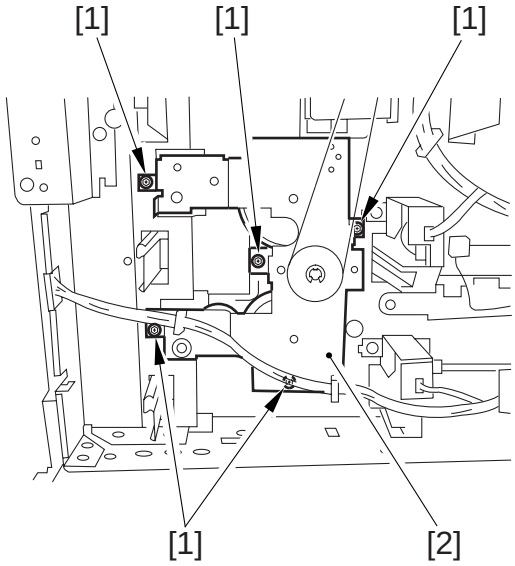


Figure 9-D718

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12. Removing the Toner Cartridge Drive Assembly

1) Remove the upper right cover.
2) Open the toner cartridge cover, and slide out the toner cartridge.
3) Remove the four screws [1], and disconnect the connector [2]; then, detach the toner cartridge drive assembly [3].

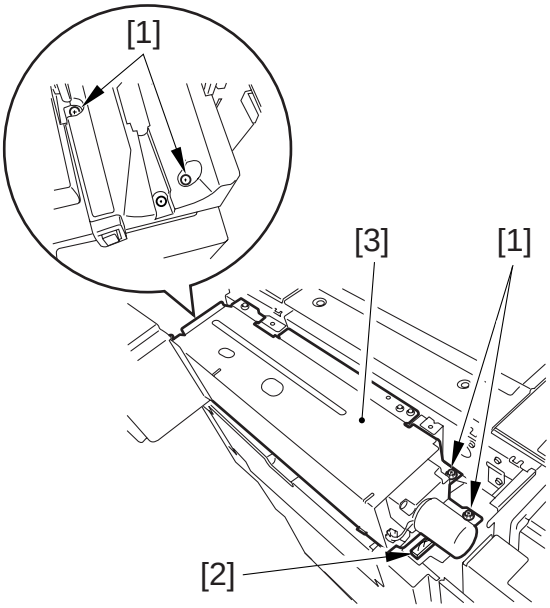


Figure 9-D719

4) Remove the three screws [4], and disconnect the connector [5]; then, detach the toner cartrdige drive motor [6].

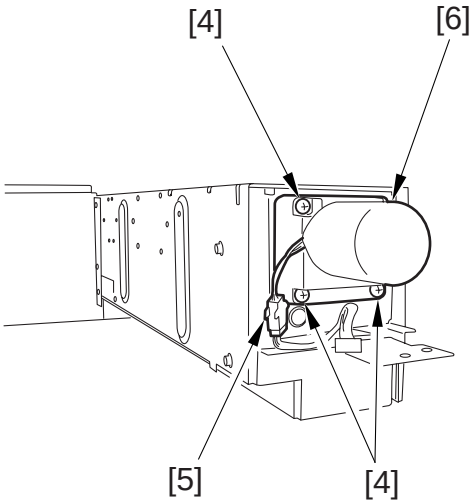


Figure 9-D720

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E. Switches

1. Removing the Cover Switch (door switch) Assembly

1) Remove the inside upper cover. (See Figure 9-A706.)
2) Remove the control panel. (See Figure 9-B704.)
3) Remove the three screws [1], and slide out the cover switch assembly [2] to the front.

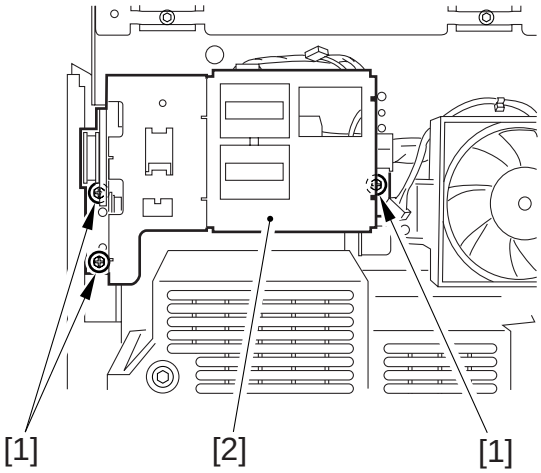


Figure 9-E701

4) Disconnect the five connectors [3], and detach the cover switch assembly [2].

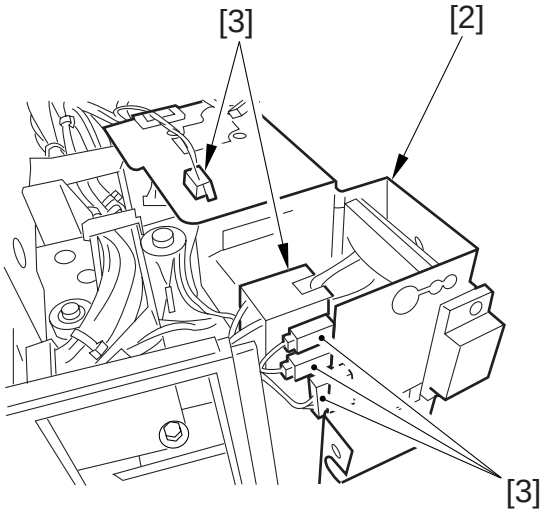


Figure 9-E702

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2. Removing the Manual Feed Tray Switch Assembly

1) Remove the inside right cover.
2) Remove the two screws [1], and disconnect the two connectors [2]; then, detach the pre-transfer charging assembly [3].

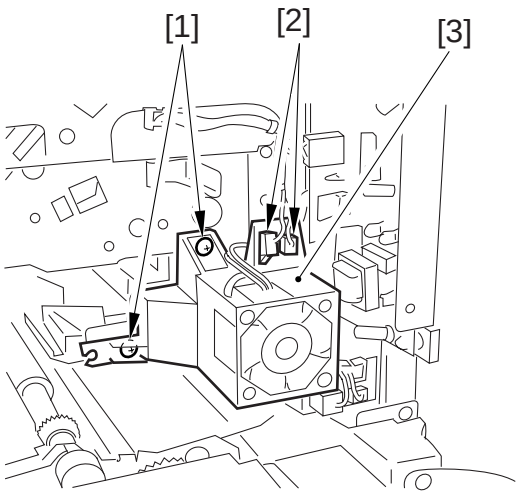


Figure 9-E703

3) Disconnect the three connectors [4], and remove the screw [5]; then, detach the potential sensor PCB [6].

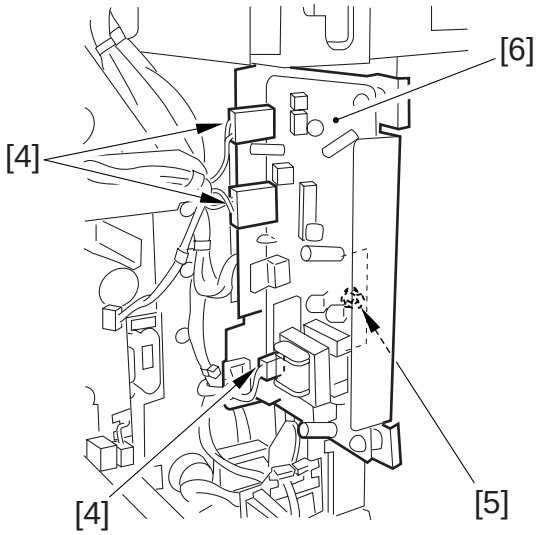


Figure 9-E704

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4) Remove the screw [7], and disconnect the two connectors [8]; then, remove the manual feed tray switching assembly [9].

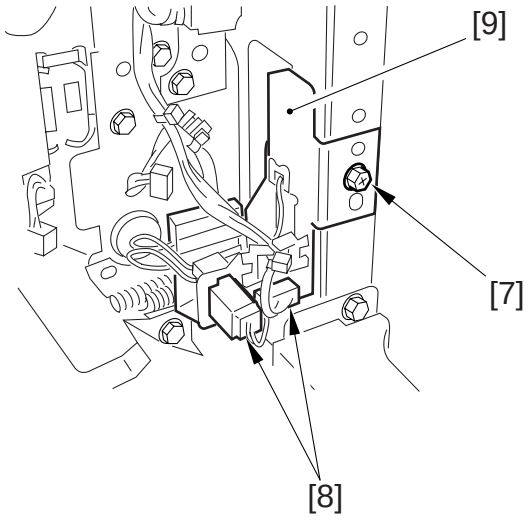


Figure 9-E705

3. Removing the Drum Heater Switch Assembly

1) Remove the lower left cover.
2) Remove the three screws [1], and disconnect the seven connectors [2]; then, remove the power supply cord mount [3], and release the fixing claw to detach the drum heater switch [4].

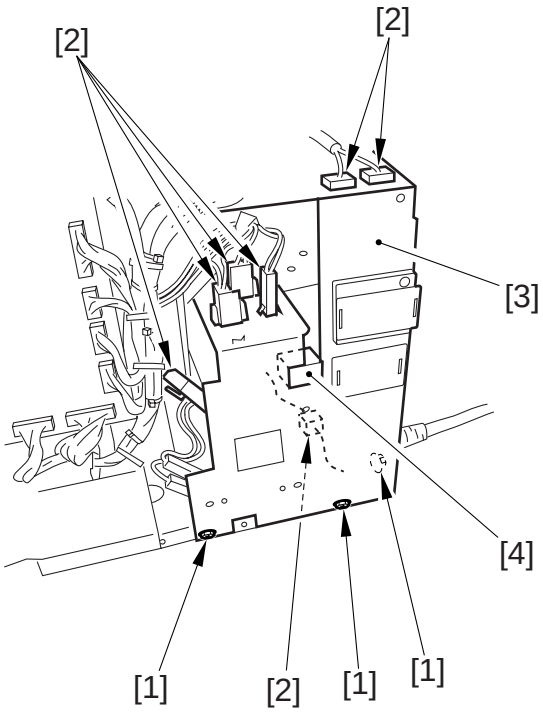


Figure 9-E706

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F. DC Controller PCB

1) Remove the rear cover.
2) Open the system box assembly.
3) Disconnect the 19 connectors on the PCB, and remove the four screws [1]; then, detach the DC controller PCB [2].

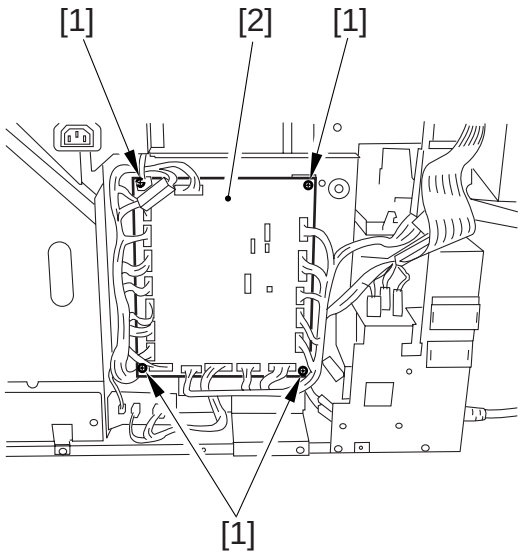


Figure 9-F701

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G. Power Supply Unit

1) Remove the lower left cover.
2) Disconnect the two connectors [1], and disconnect the 19 connectors on the relay PCB [2].

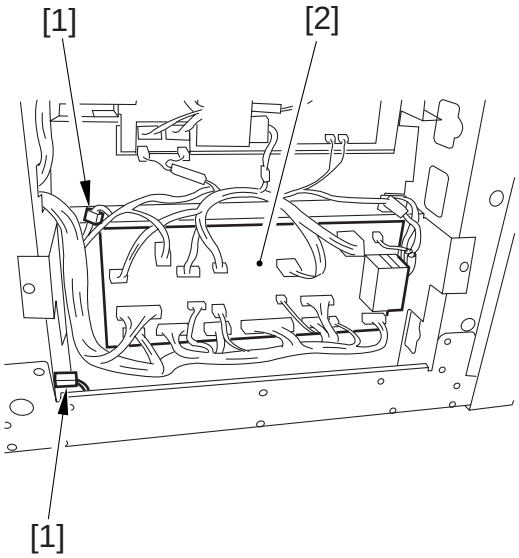


Figure 9-G701

3) Remove the two screws [3], and detach the cover plate [4]; then, remove the two screws [5], and detach the power supply unit [6].

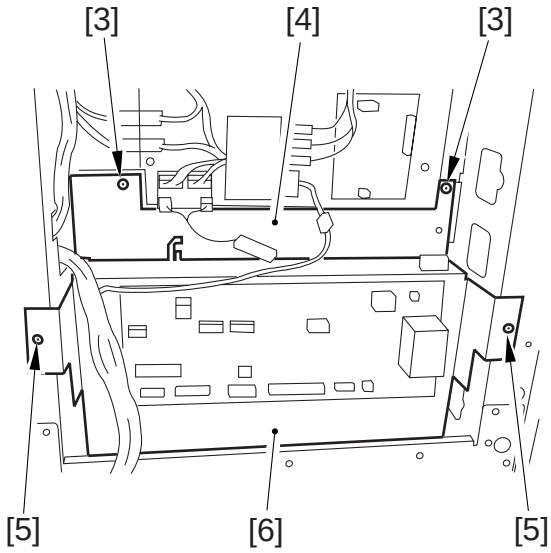


Figure 9-G702

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H. High-Voltage Transformer (AC)

1) Remove the rear cover.
2) Remove the waste toner case and the waste toner case mount.
3) Disconnect the four connectors [1], and remove the screw [2]; then, detach the high-voltage transformer assembly (AC) [3].

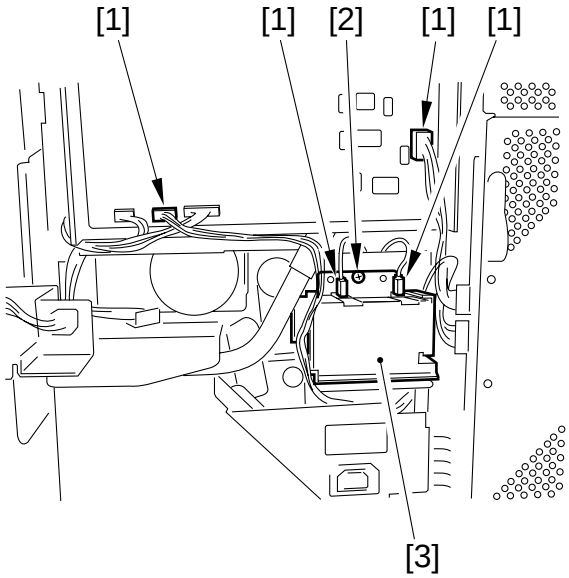


Figure 9-H701

I. High-Voltage Transformer (DC)

1) Remove the rear cover.
2) Disconnect the five connectors [1], and remove the two screws [2]; then, detach the high-voltage transformer assembly (DC) [3].

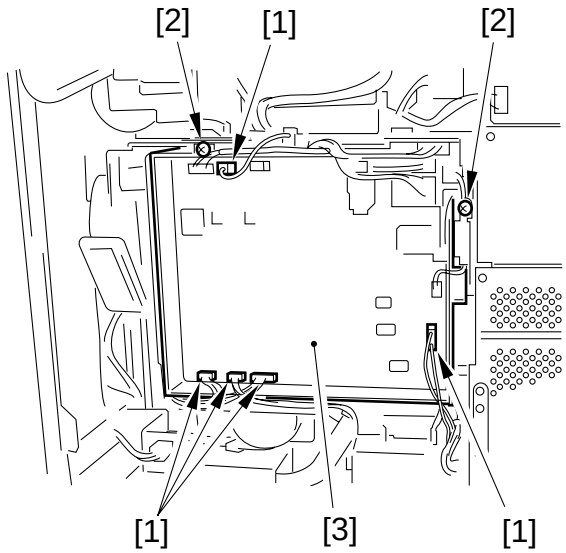


Figure 9-I701

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J. Relay PCB

1) Remove the lower left cover.
2) Disconnect the connector from the relay PCB, and remove the PCB spacer to detach the relay PCB [1].

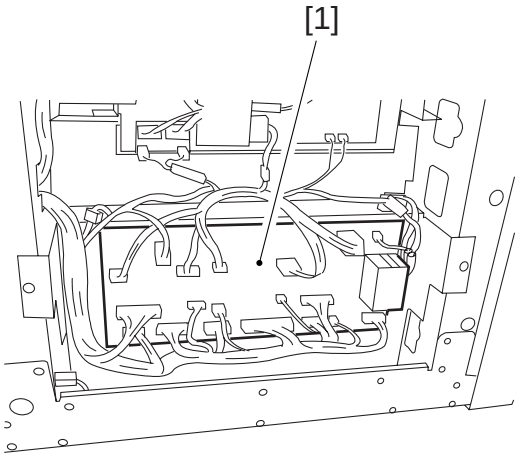


Figure 9-J701

K. MFC PCB

1) Remove the rear cover.
2) Remove the system box.
3) Remove the 16 screws [1], and detach the system cover 1 [2].

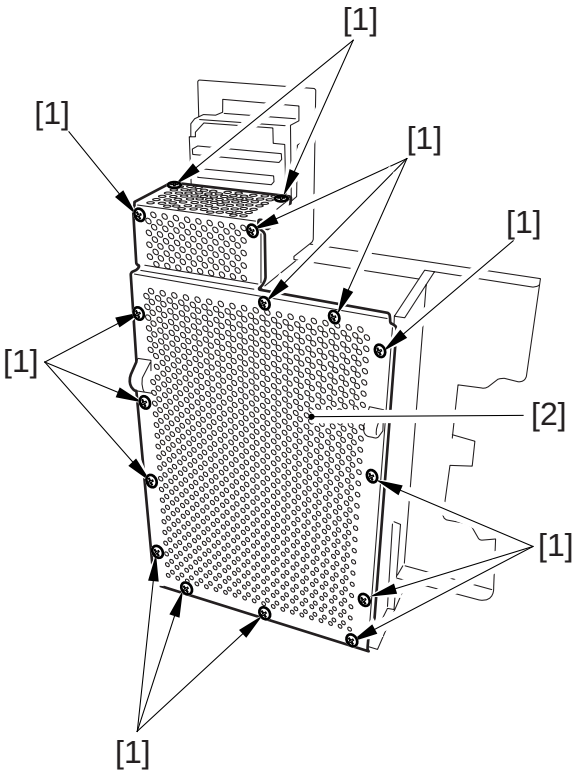


Figure 9-K701

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4) Remove the two screws [3], and detach the face plate [4]; then, remove the three screws [5], and detach the partition plate [6].

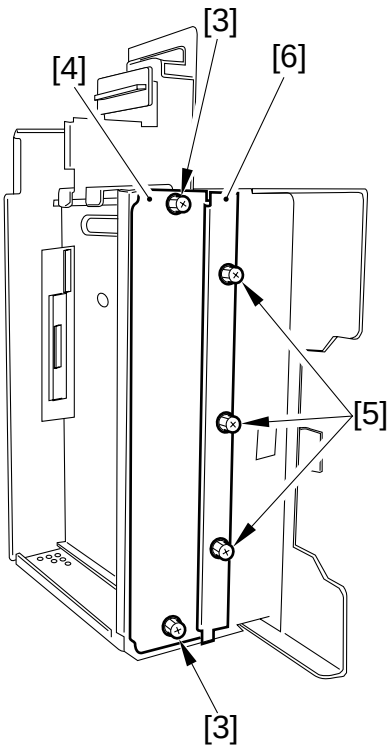


Figure 9-K702

5) Disconnect the three connectors [7], and remove the four screws [8]; then, detach the motherboard PCB [9].

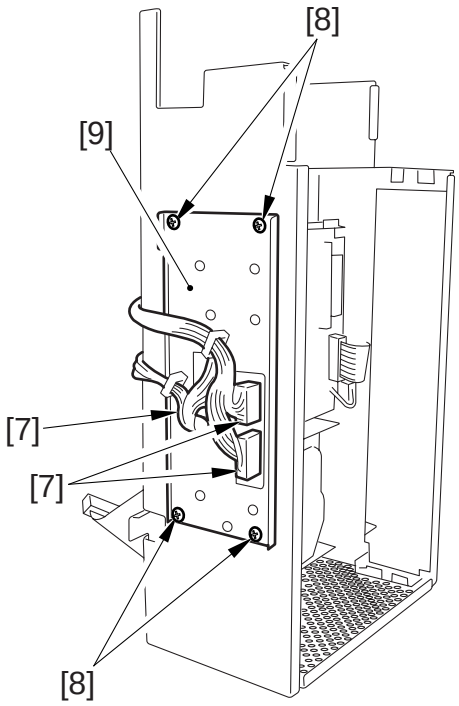


Figure 9-K703

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6) Disconnect the four connectors [10], and remove the seven screws [11]; then, detach the MFC PCB [12].

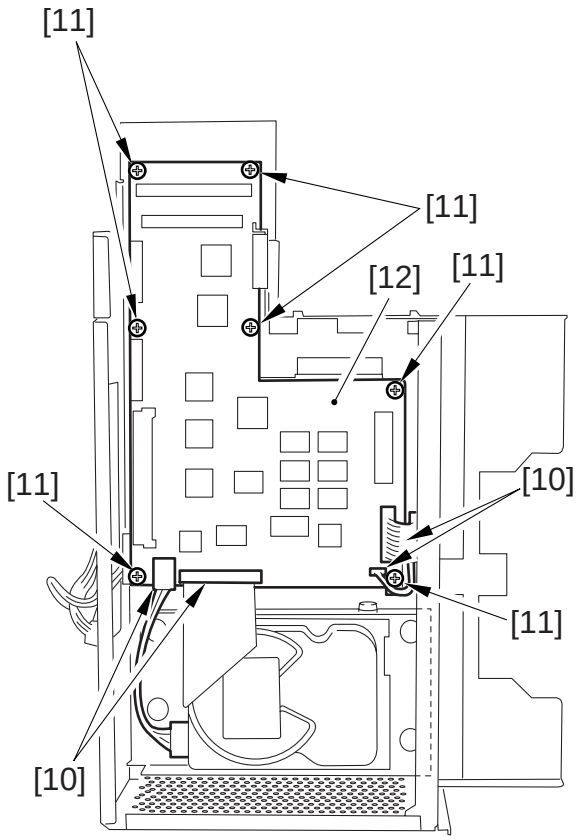


Figure 9-K704

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L. Routing the Belt

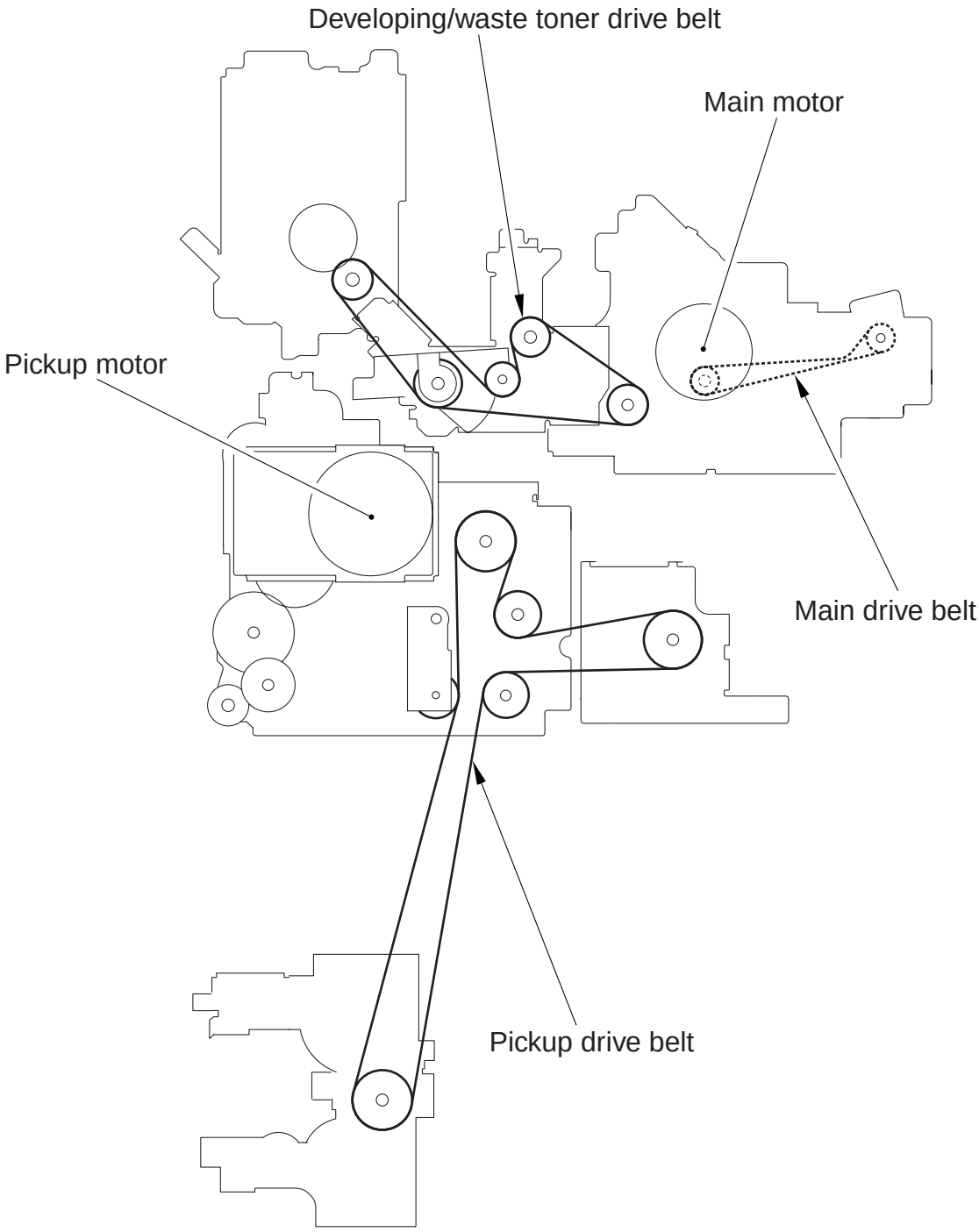


Figure 9-L701

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CHAPTER 10

SIDE PAPER DECK

This chapter provides descriptions on basic operations of the paper deck, functions of each operation, relationships between electrical and mechanical systems, and timing at which each associated part is turned on.

I. SIDE PAPER DECK 10-1
- A. Inputs to and Outputs from the Side Deck Driver 10-1
- B. Pickup 10-4
- C. Deck Paper Detection 10-7
- D. Deck Lifter 10-9
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- E. Electrical System 10-44

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I . SIDE PAPER DECK

A. Inputs to and Outputs from the Side Deck Driver

1. Inputs to the Side Deck Driver (1/2)

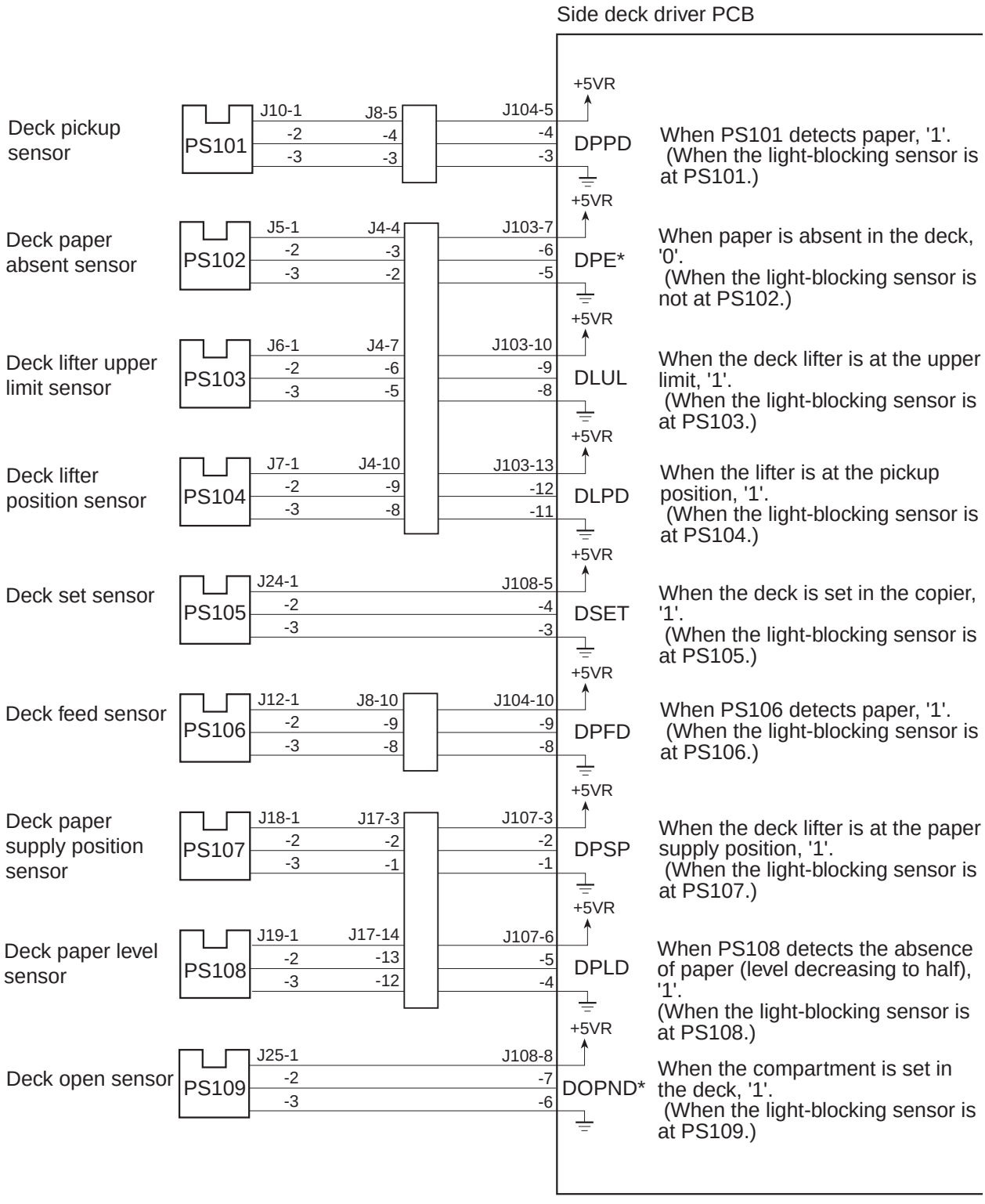


Figure 10-101a

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2. Inputs to the Side Deck Driver Input (2/2)

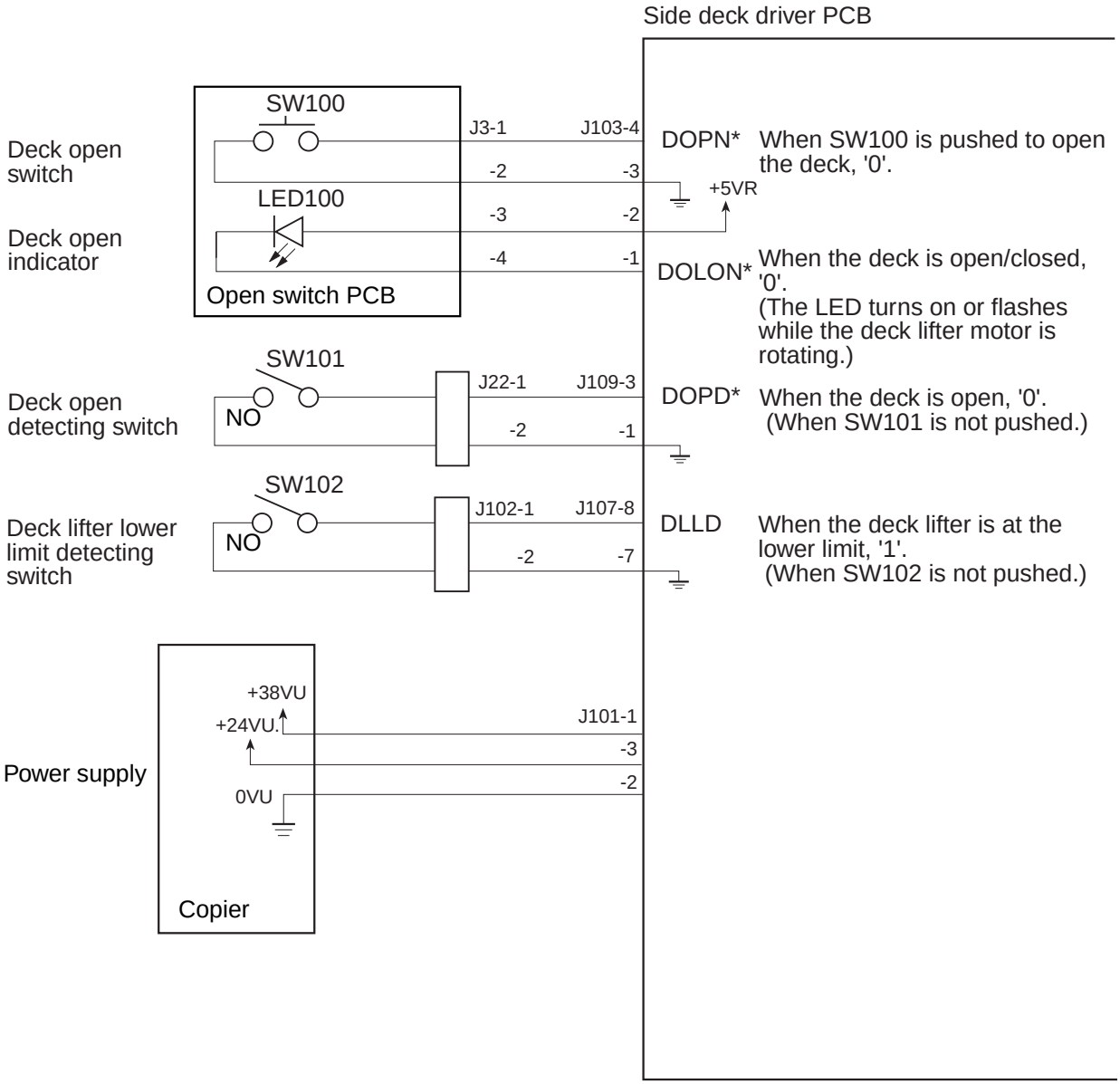


Figure 10-101b

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3. Outputs from the Side Deck driver (1/1)

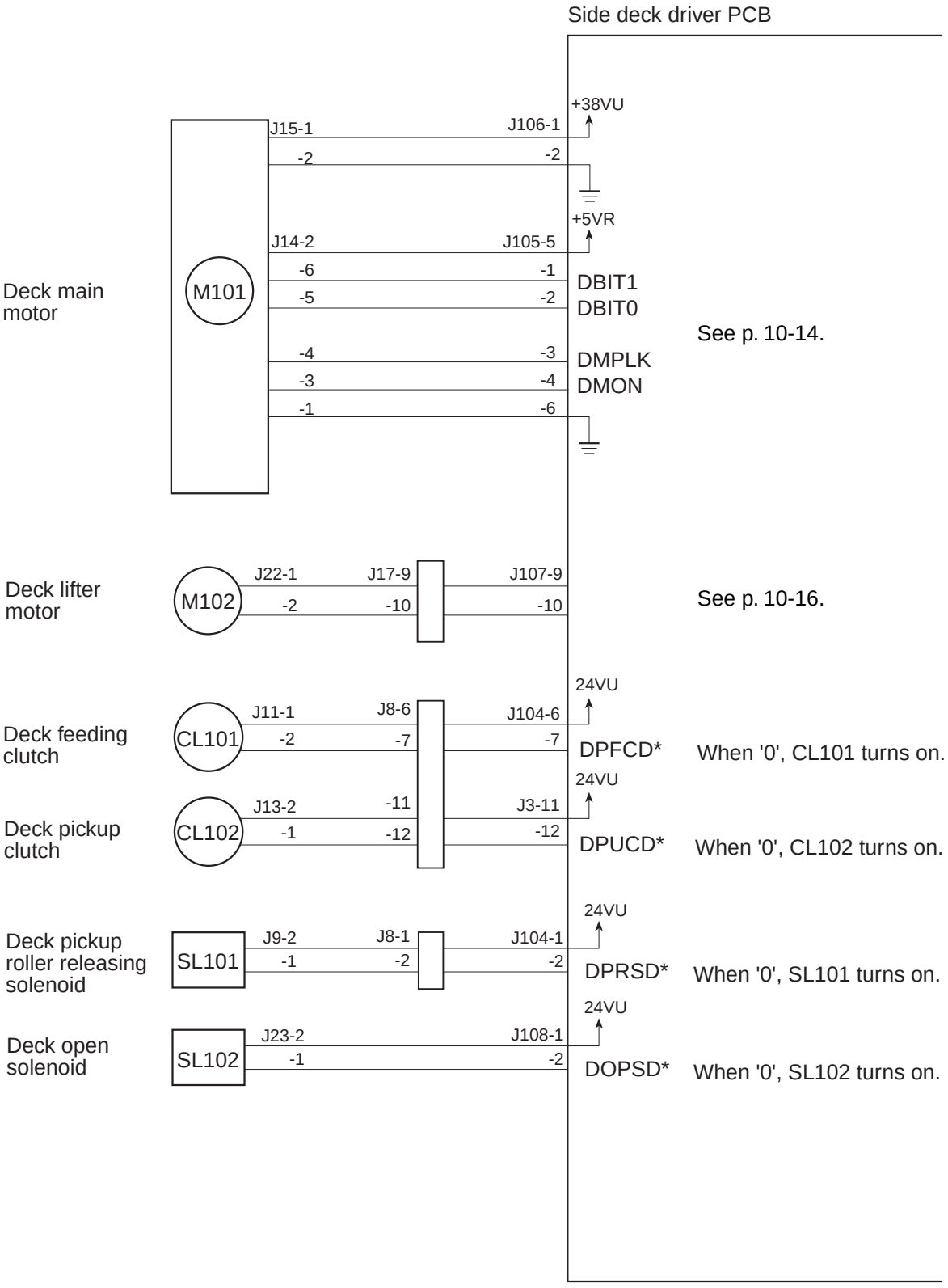


Figure 10-102

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B. Pickup

1. Outline

The side paper deck (hereafter, "deck") is capable of holding as many as 3,500 sheets of paper (A4/LTR/B5 of 80 g/m^2), and operates in response to the control signals from the copier's DC controller.

The lifter of the deck is driven by the deck lifter motor (M102), and paper is picked up and moved by the drive of the deck main motor (M101).

2. Pickup Operation

The paper set in the deck is held up by the lifter, and is kept at a specific position.

When the Copy Start key is pressed and the deck pickup clunch (CL102) turns on, the drive of the deck main motor (M101) rotates the pickup roller to start pickup operation. At this time, the pickup/feeding roller and the separation roller serve to make sure that only one sheet of paper is picked up.

Then, when the deck pickup sensor (PS101) detects paper, the deck pickup roller releasing solenoid (SL101) turns on so that the pickup roller leaves the surface of paper.

The deck feeding roller starts to rotate when the deck feeding clutch (CL101) turns on. Then, the paper that has been picked up is moved to the copier's registration roller, and is made to arch so as to remove the skew.

The registration roller controls the paper so that its leading edge and the leading edge of the image on the photosensitive drum match.

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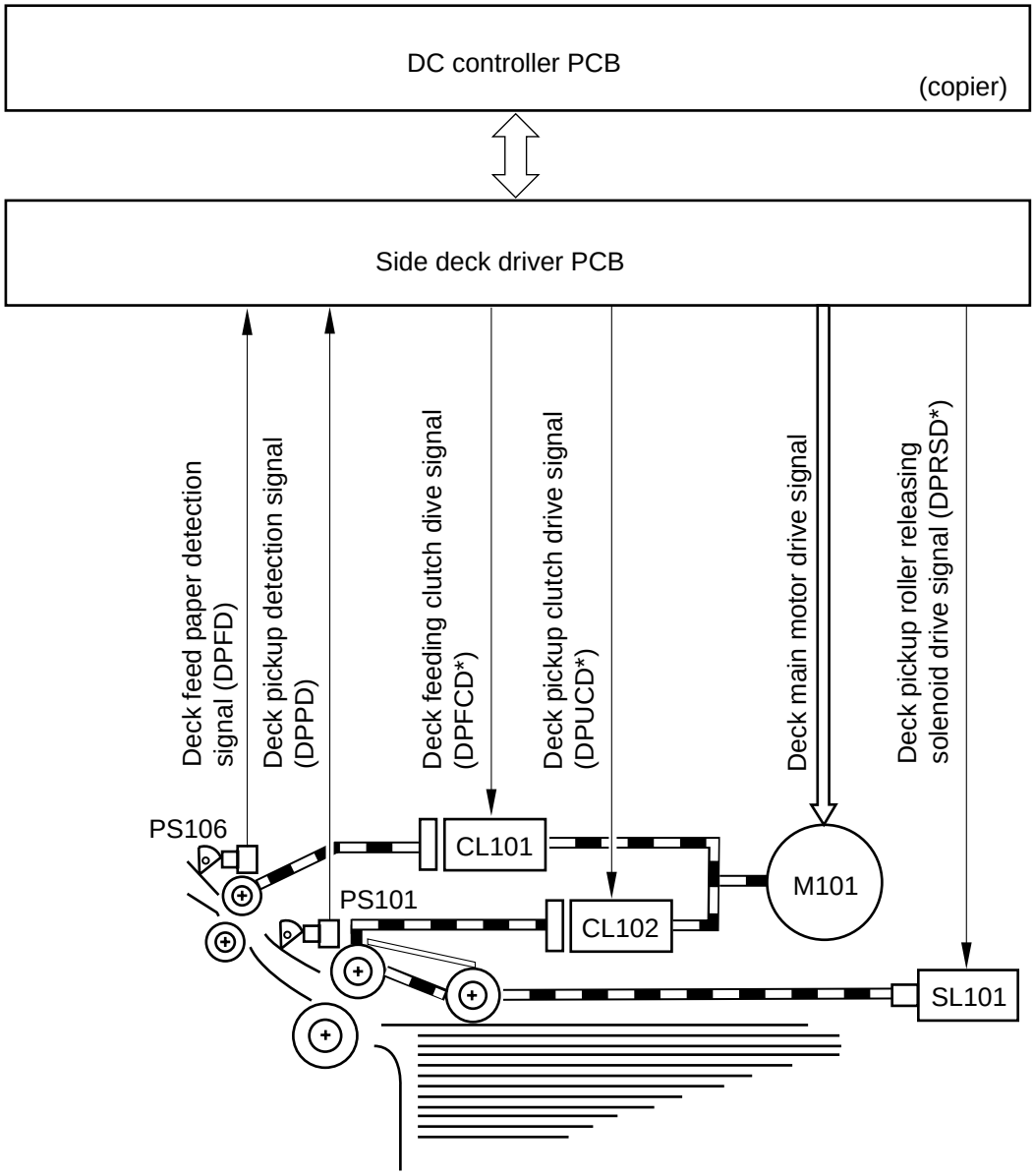


Figure 10-103

3. Sequence of Operations (pickup from the deck)

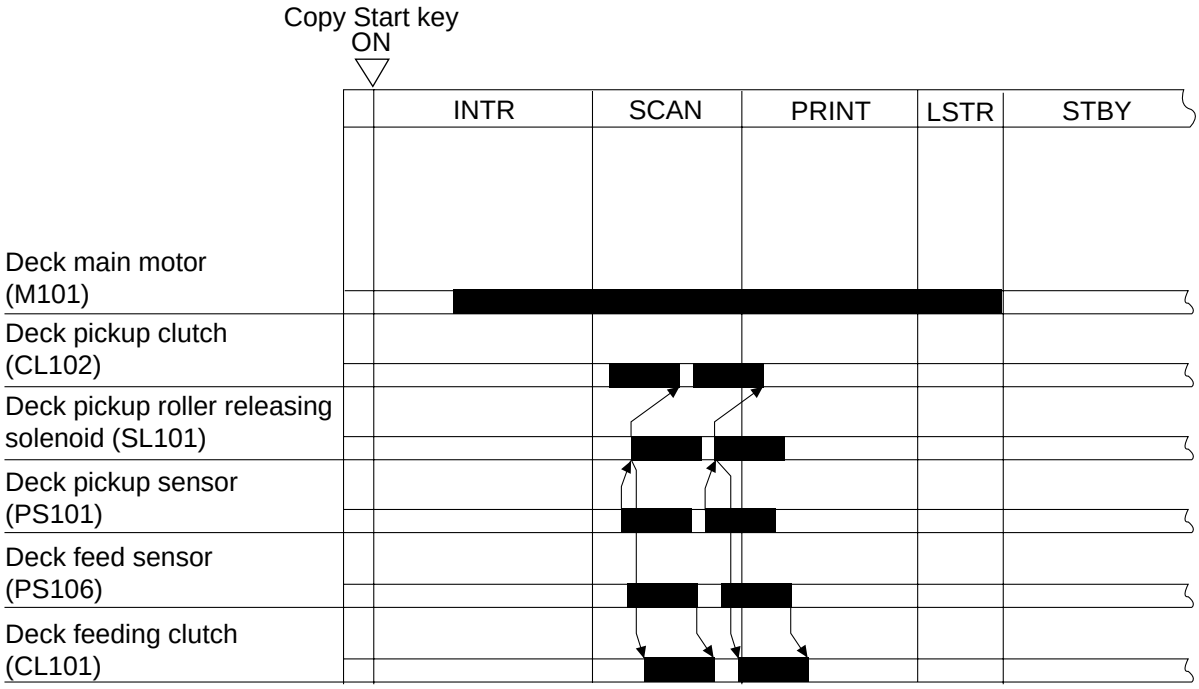


Figure 10-104

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C. Deck Paper Detection

1. Detecting the Presence/Absence of Paper

The presence/absence of paper inside the deck is detected by the deck paper absent sensor (PS102). When the deck runs out of paper and, as a result, the paper detecting lever of the pickup roller assembly leaves the deck paper absent sensor, the copier's control panel will indicate the absence of paper.

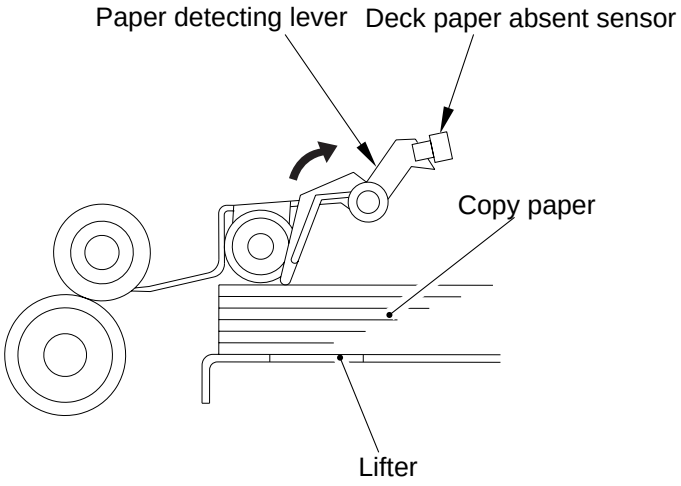


Figure 10-105a Paper Present

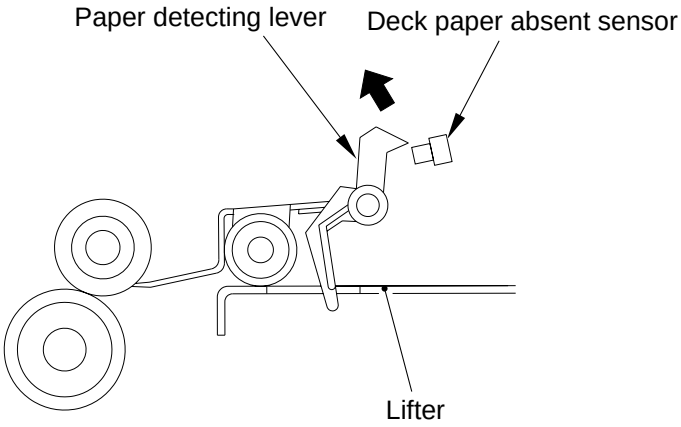


Figure 10-105b Paper Absent

2. Switching the Deck Paper Size

To change the deck paper size, move the guide plate inside the deck at time of installation or in response to the user's request, and enter the new paper size in service mode (OPTION>ACC>DK-P).

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3. Deck Paper Level Detection

The deck uses the deck paper supply position sensor (PS107), deck paper level sensor (PS108), and deck paper absent sensor (PS102) to find out and communicate to the copier an approximate level of paper inside its compartment so that the level may be indicated in the copier's control panel. Table 10-101 shows the possible combinations of sensor outputs and levels of paper.

Paper level	PS102	PS107	PS108	Control panel indication
About 1750 to 3500 sheets	1	1	1	
About 500 to 1750 sheets	1	1	0	
1 to about 500 sheets	1	0	0	
0	0	0	0	

1: The light-blocking plate is over the sensor.
0: The light-blocking plate is not over the sensor.

Table 10-101

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D. Deck Lifter

1. Detecting the Presence/Absence of Paper

The lifter of the deck is connected to a reel by means of a cable, and is driven by the deck lifter motor (M102). The lifter is moved up or down by changing the direction of rotation of the motor.

When the deck (compartment) is pushed inside the copier, the deck open detecting switch (SW101) is pushed; the lifter stops when the deck open sensor (PS109) detects the light-blocking plate.

The deck lifter upper limit sensor (PS103) is used to prevent damage to the deck in the event that the lifter fails to stop moving up beyond the deck lifter position sensor because of some fault.

The lifter starts to move down as soon as the deck open switch (SW100) is pushed, and continues to move down until the deck paper supply position sensor (PS107) leaves the sensor lever (falling edge of the sensor output).

When paper is supplied, the paper will push the lever of the deck paper supply position sensor, causing the lifter to move farther down until the stack of paper leaves the sensor lever.

The lifter repeats downward movement each time paper is supplied until it pushes the deck lifter lower limit detecting switch (SW102; maximum paper supply position).

The copier's DC-CPU monitors the combination of sensor outputs (activation) related to the movement of the deck lifter; when the deck lifter position sensor (PS104) output and the deck level sensor position sensor (PS108) output are '1' and the deck paper supply position sensor (PS107) is '0' (not likely in practice), the copier's control panel will indicate 'E041'.

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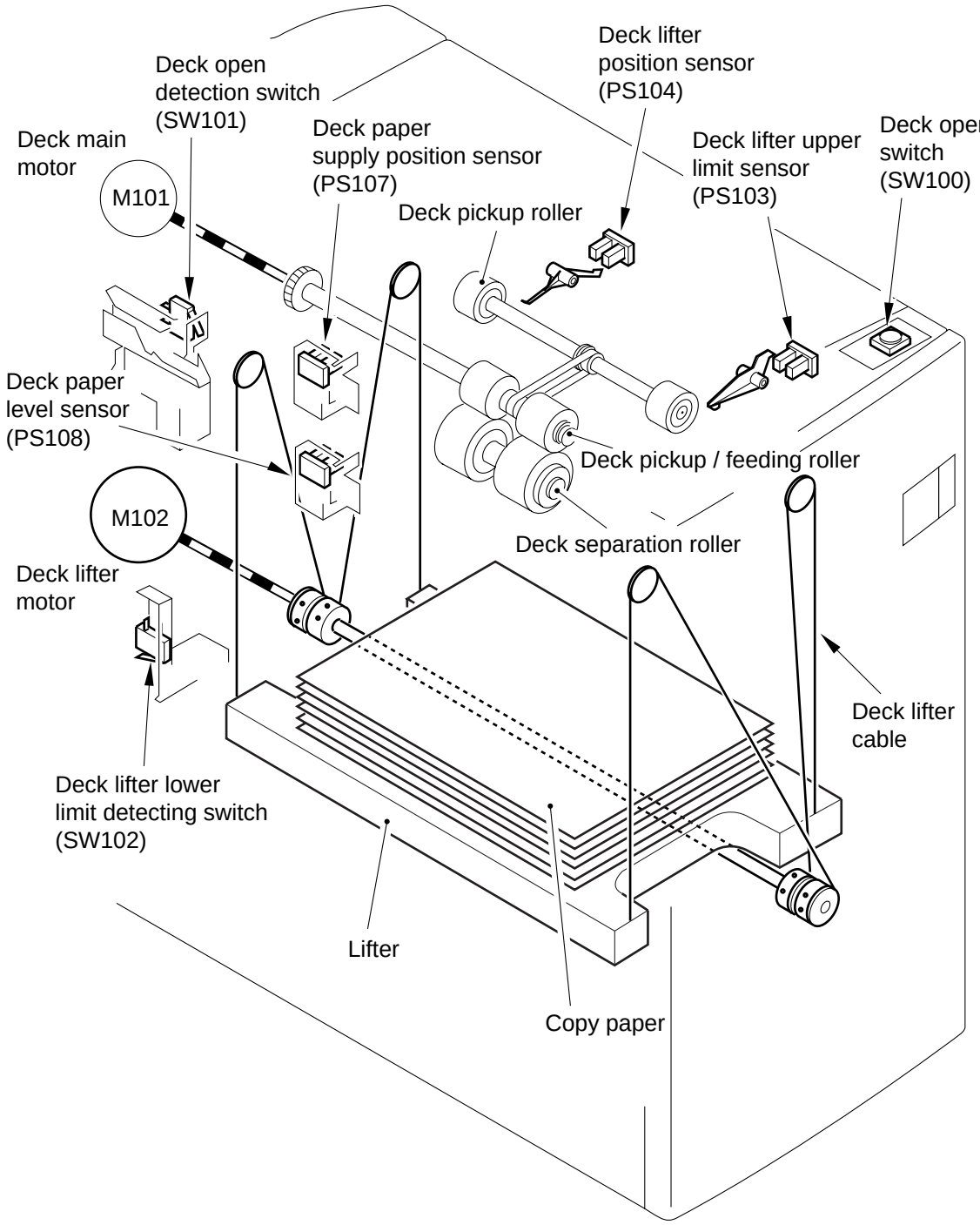


Figure 10-106

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2. Paper Level Indicator on the Deck Front Cover

The drive of the deck lifter motor (M102) is received by a coupling, and is forwarded to the rack by a drive belt. The rack is equipped with a black belt, which moves up and down within the indicator window placed in the deck front cover.

When the level of paper lowers and, as a result, the lifter moves up to pickup position, the area of the black belt within the indicator window increases gradually, decreasing the white area so as to indicate the decreasing level of paper.

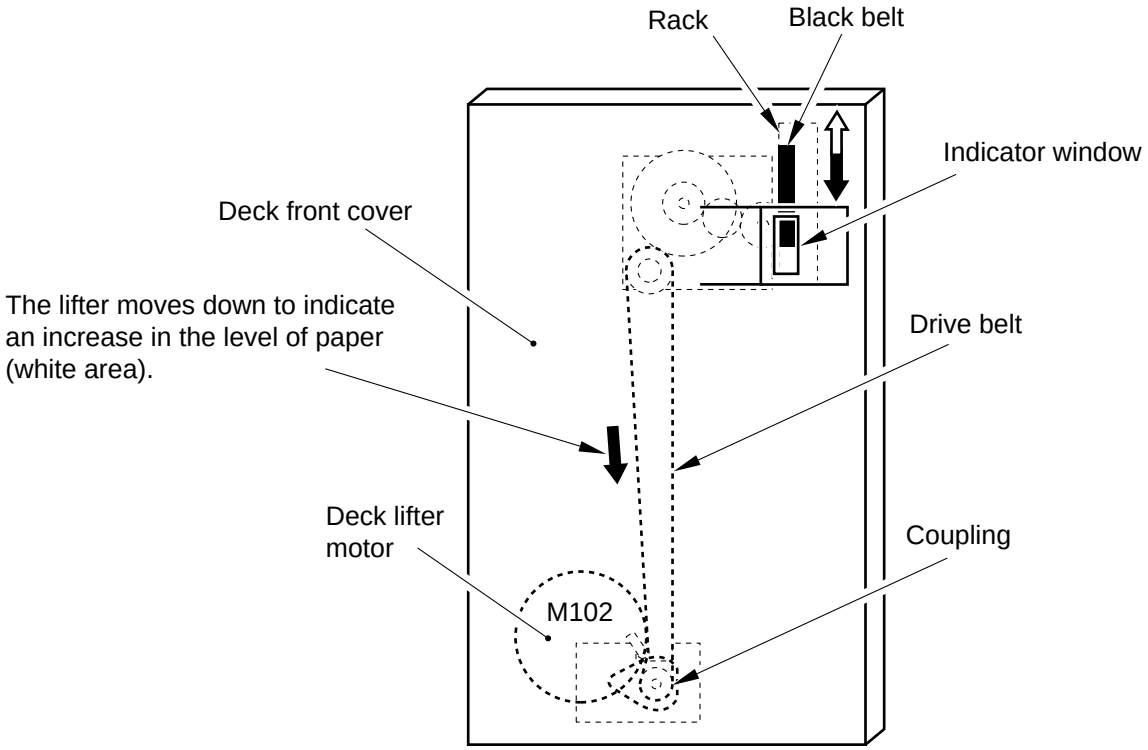


Figure 10-107

E. Opening / Closing the Deck (compartment)

1. Opening/Closing the Deck

When the deck open switch (SW100) is pushed, the deck open solenoid (SL102) turns on to release the deck (compartment), causing the deck to be pushed several centimeters to the front by the work of a spring. At the same time, the deck lift motor (M102) starts to rotate, and the lifter inside the deck moves down.

When the deck (compartment) is pushed inside the copier manually, the deck open sensor (PS109) detects the light-blocking plate of the compartment, and the lifter moves up to the pickup position.

When the deck lifter motor starts to rotate as when the deck is opened or closed, the deck open indicator (LED100) on the open switch PCB will turn on or flash.

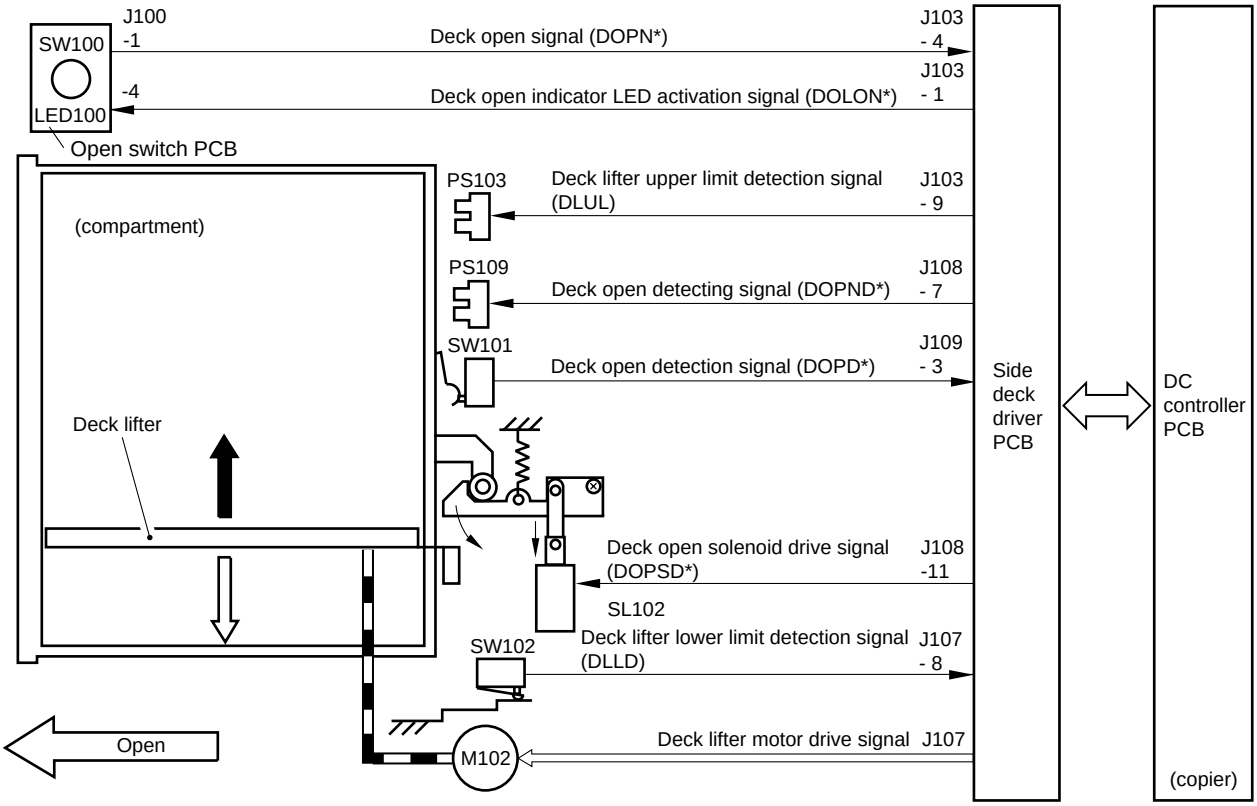
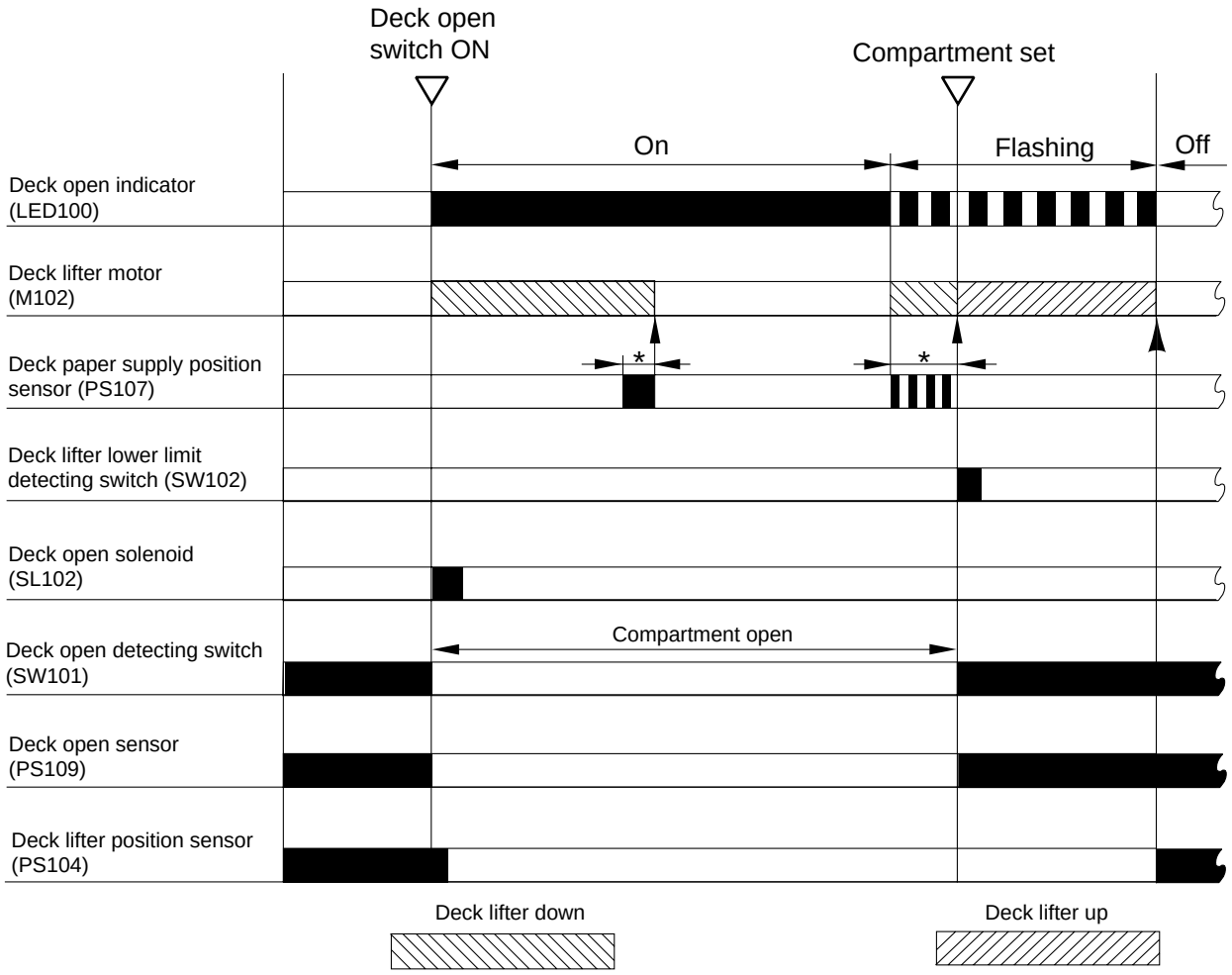


Figure 10-108

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2. Sequence of Operations (opening/closing the deck)



* : Varies according to the level of the stack.

Figure 10-109

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F. Controlling the Deck Motor

1. Controlling the Deck Main Motor (M101)

The deck main motor is controlled by the copier's DC controller. Figure 10-110 shows the circuit that drives the deck main motor, and has the following functions:

[1] Turning on and off the deck main motor.

[2] Switching the speed or rotation of the deck main motor.

a. Turning On and Off the Motor

When the deck main motor drive signal (DMON) from the copier goes '1', the motor drive circuit turns on so that the motor starts to rotate at a specific speed. On the other hand, when the deck main motor drive signal (DMON) goes '0', the motor drive circuit goes off to stop the motor.

The copier's DC controller monitors the rotation of the deck motor in reference to the deck main motor PLL lock signal (DMPLK); if the motor PLL lock signal remains '1' for 900 msec or more while DMON is '1' for some reason, the copier's control panel will indicate 'E043' .

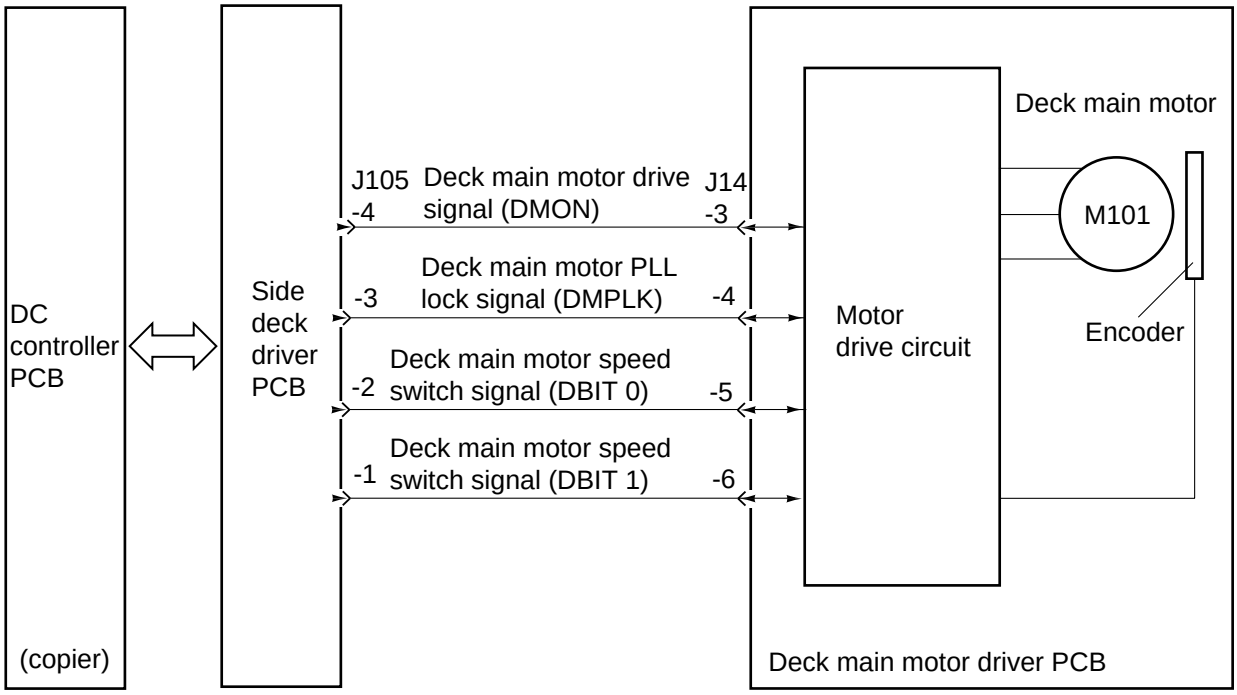


Figure 10-110

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b. Switching the Motor Rotation Speed

To accommodate future copiers, the deck is equipped with a mechanism that automatically switches pickup/feeding speed, in response to and based on combinations of the speed switch signals (DBIT 0, DBIT 1) from the copier's DC controller to the side deck driver PCB.

The combinations of the speed switch signals are as shown in Table 10-102. (In the case of the host copier, the motor rotates at high speed.)

Rotation speed	Speed switch signal	
	DBIT 0	DBIT 1
High speed	L	L
Medium speed	H	L
Low speed	L	H

Table 10-102

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2. Controlling the Deck Lifter Motor (M102)

The deck lifter motor control circuit is located on the side deck driver PCB. (See Figure 10-111 for a block diagram.)

The combination circuit in the diagram consists of various logic circuits, and serves to rotate the deck lifter motor clockwise or counterclockwise based on the combinations of the deck lifter motor drive signal (DLMON*) and the deck lifter up signal (DLUP*) from the copier's DC controller and the output signals from various sensors.

The copier's control panel will indicate 'E041' if the deck lifter position sensor (PS104) does not detect the lifter in about 60 sec after the generation of the deck lifter up signal.

[1] Conditions Making the Lifter Move Up

- The deck is connected to the copier. → deck set signal (DSET) = '1'
- The deck (compartment) is closed. → deck open detection signal (DOPND*) = '1'
- The deck (compartment) is closed. → deck open detecting switch = 'ON'
- deck lifter upper limit detection signal (DLUL) = '0' and deck lifter position detection signal (DLPD) = '0'
- deck lifter motor drive signal (DLMON*) = '0'
- deck lifter up signal (DLUP*) = '0'

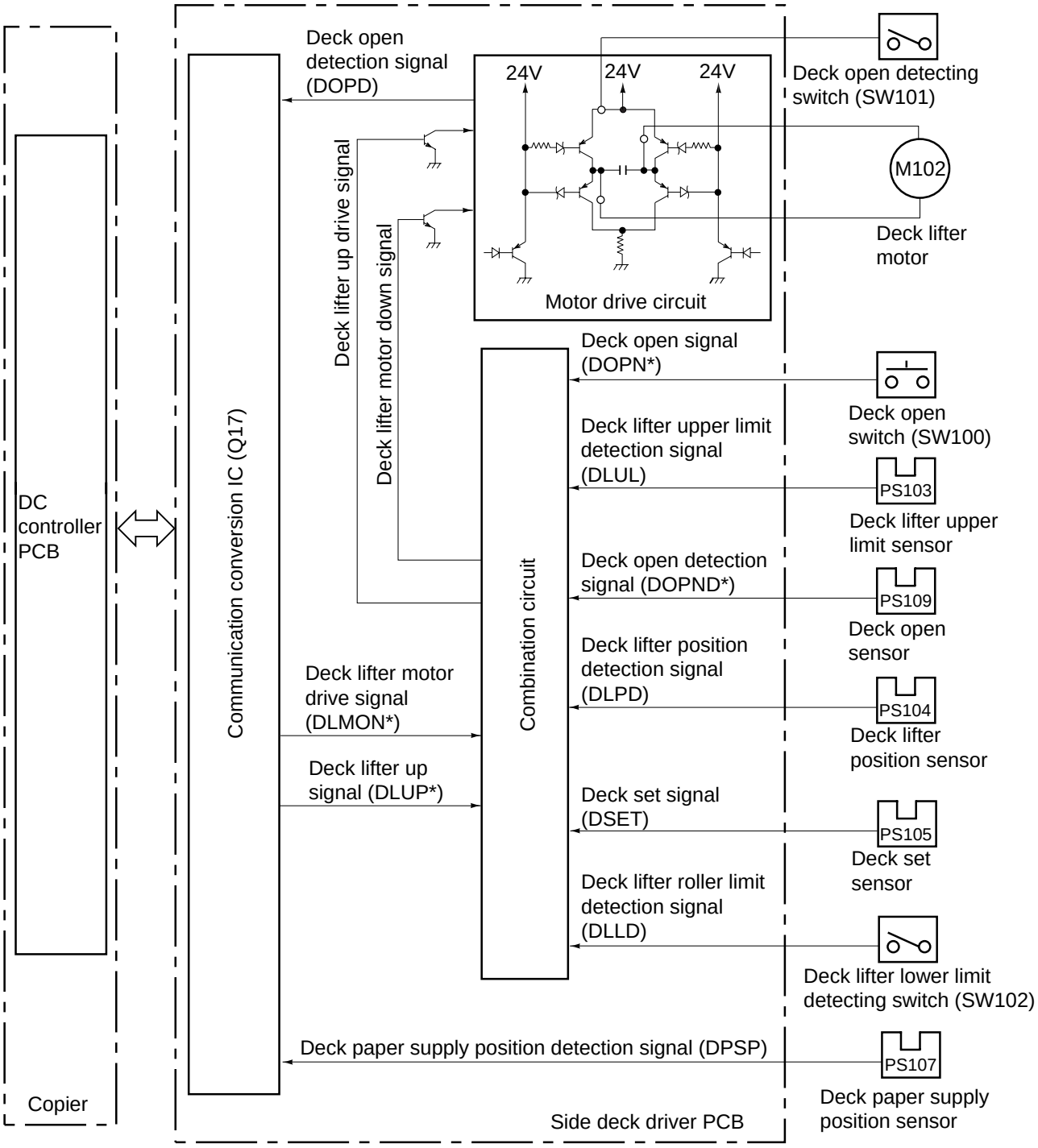
As a result, the lifter moves up.

[2] Conditions Making the Lifter Move Down

- The deck (compartment) is open. → deck open detection signal (DOPND*) = '0'
- deck lifter lower limit detecting signal (DLLD) = '0' and deck lifter position detection signal (DLPD) = '0'
- deck lifter motor drive signal (DLMON*) = '0'
- deck lifter up signal (DLUP*) = '1'

As a result, the lifter moves down.

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Note: The communications conversion IC (Q17) in the diagram converts serial signals to parallel signals and vice versa.

Figure 10-111

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II. DETECTING JAMS

A. Outline

The side paper deck is equipped with the two sensors shown in Figure 10-201 to find out whether paper is being moved normally.

A jam is identified based on the outputs of the signals at such times as instructed by the copier's DC controller. When the copier's DC controller identifies a jam, all paper moving ahead of the jam is discharged and the operation is stopped. (Then, the copier's control panel shows how to remove jams.)

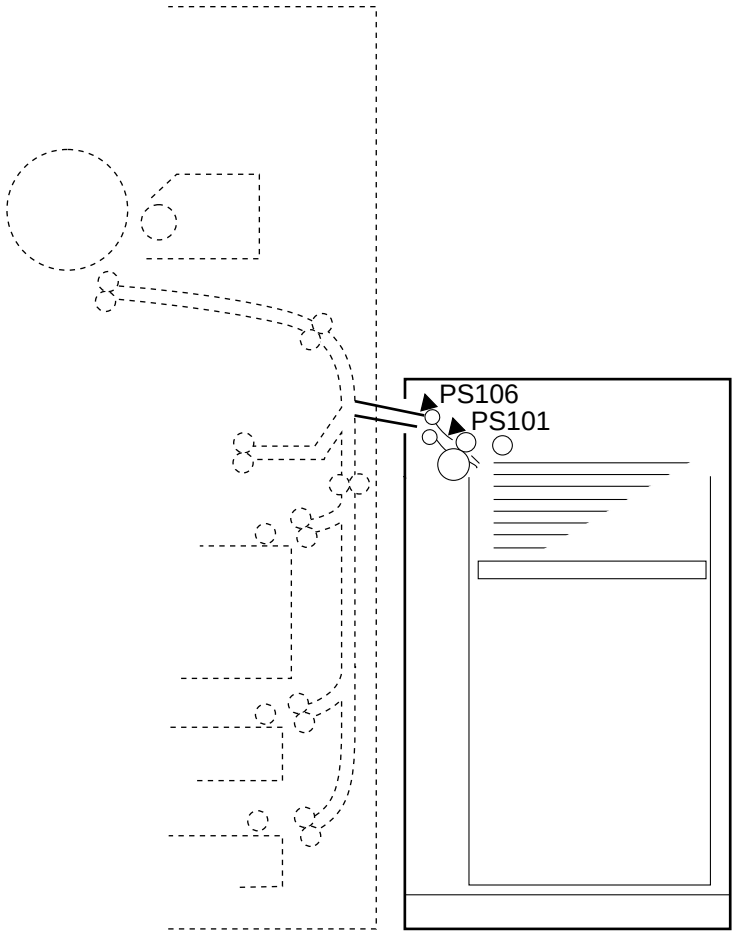


Figure 10-201

Sensor No.	Name	Description
PS106	Deck feed sensor	Finding a delay jam.
PS101	Deck pickup sensor	Finding a delay jam.

Table 10-201

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The copier's DC controller identifies a jam under the following conditions:

1. When the copier's power switch is turned on, at the end of the WAIT period, or in standby, paper exists over the deck feed sensor (PS106).

2. Deck Pickup/Vertical Path Delay Jam

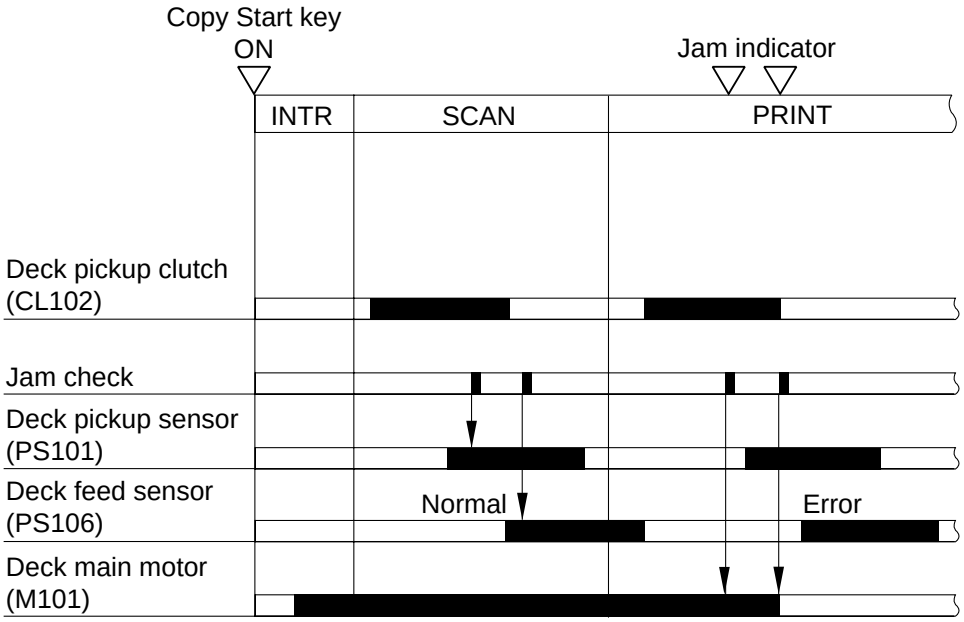


Figure 10-202

III . DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws to protect against static electricity.
5. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
6. ⚠ If the deck is equipped with an anti-humidity heater, be sure to disconnect its power plug for safety.

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A. External Covers

[1] Deck releasing grip
[2] Upper front cover
[3] Compartment open/closed detecting switch
[4] Front cover
[5] Right cover
[6] Upper cover
[7] Rear cover

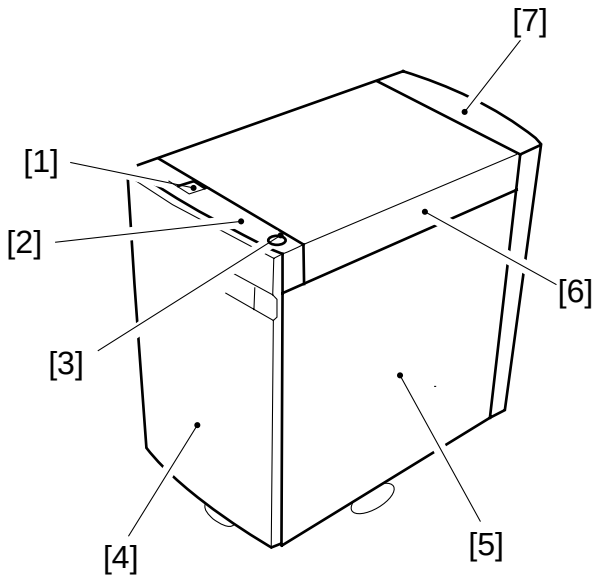


Figure 10-A301

1. Removing the Front Cover

1) Release the deck from the copier, and push down the latch plate [2] of the compartment [1]; then, open the compartment [1].

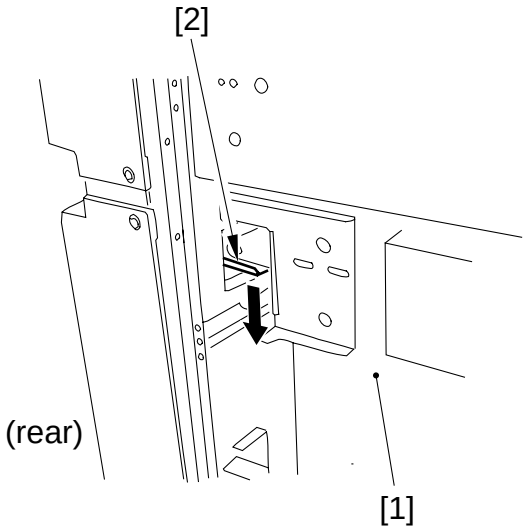


Figure 10-A302

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2) Loosen the four screws [3], and remove the front cover [4] of the deck toward the front.

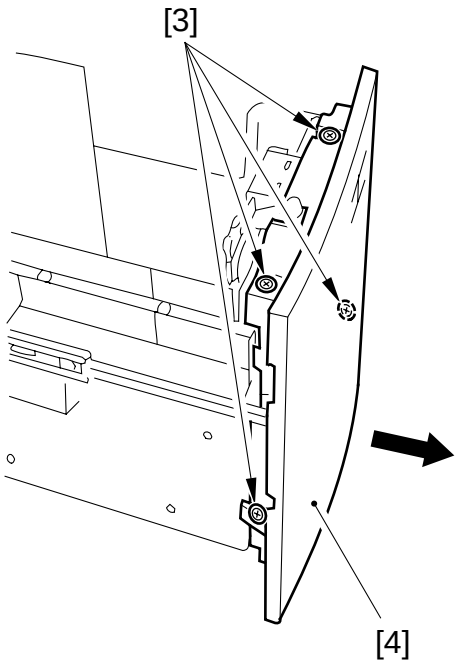


Figure 10-A303

Caution:
When mounting the front cover to the deck, be sure to match the coupling used as a paper level indicator.

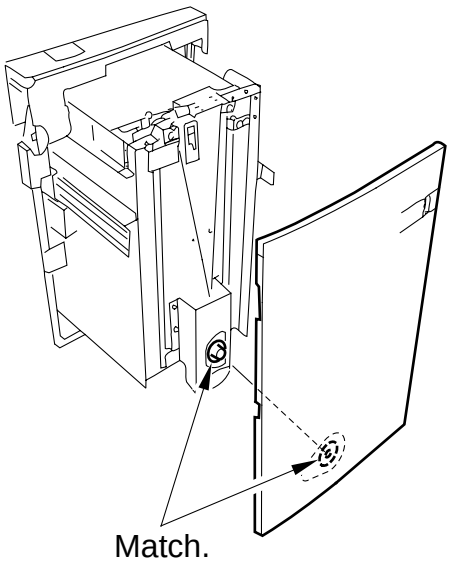


Figure 10-A304a

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Caution:
When mounting the front cover, be sure that the gap between the front cover and the upper front cover is 3 ±1 mm.

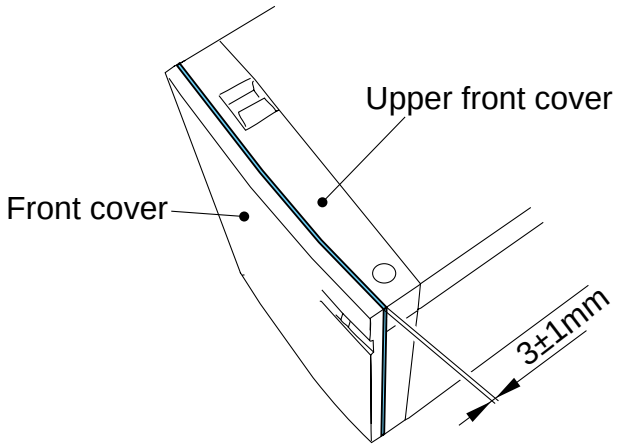


Figure 10-A304b

Caution:
If you inadvertently moved the drive belt for the paper level indicator behind the front cover when removing the front cover and cannot find its initial position, or moved the deck lifter, move down the deck lifter to its lower limit, and move the drive belt in the direction of the arrow (thereby increasing the while area) until it stops; then, mount the front cover. (Operating the deck without matching the paper level indicator and the deck lifter position can damage the drive mechanism of the paper level indicator.)

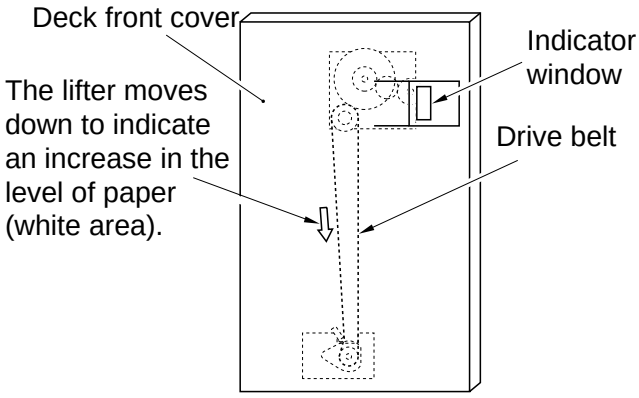

Deck front cover
The lifter moves down to indicate an increase in the level of paper (white area).
Indicator window
Drive belt

Figure 10-A305 (front view)

2. Removing the Rear Cover

1) Release the deck, and remove the six screws [1]; then, detach the rear cover [2].

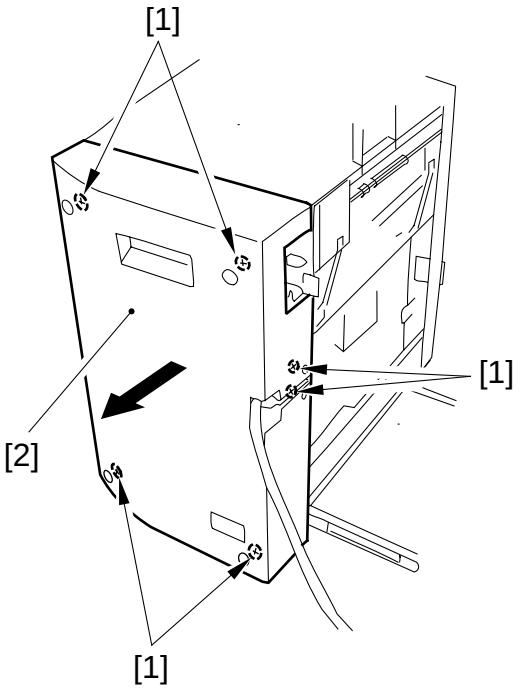


Figure 10-A306

3. Removing the Right Cover

1) Remove the three screws [1], and move the right cover [2] to the front; then, remove it toward the rear.

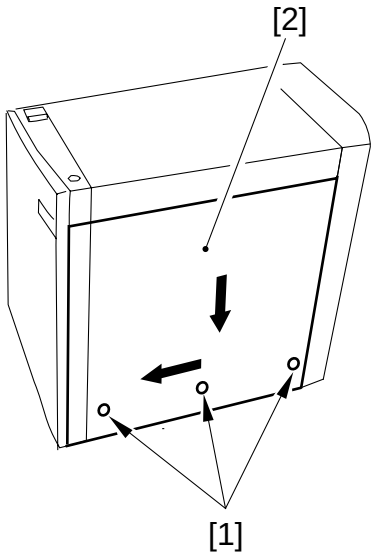


Figure 10-A307

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4. Removing the Upper Cover

1) Remove the rear cover. (See p. 10-24.)
2) Push down the latch plate [2] of the compartment [1] to open the compartment [1].

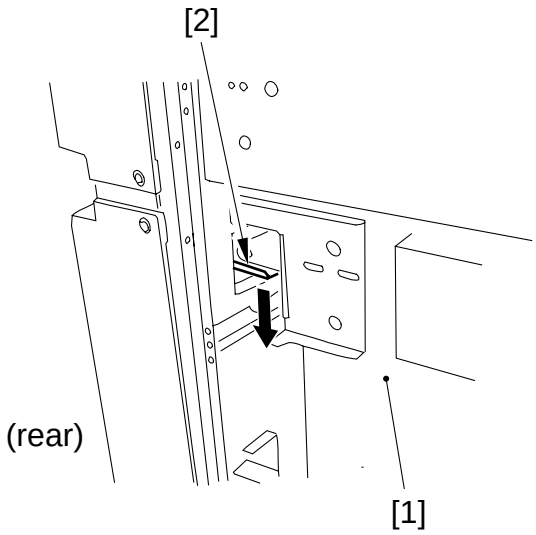


Figure 10-A308

3) Remove the three screws [3], and disconnect the connector [4]; then, remove the upper front cover [5].

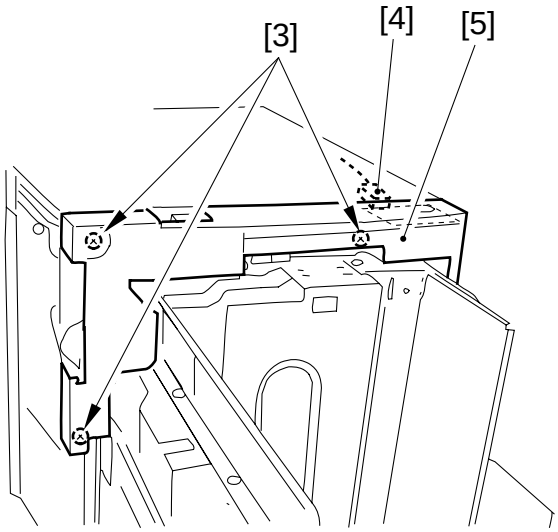


Figure 10-A309

4) Close the deck vertical path assembly, and remove the two screws [6]; then, detach the upper cover [7].

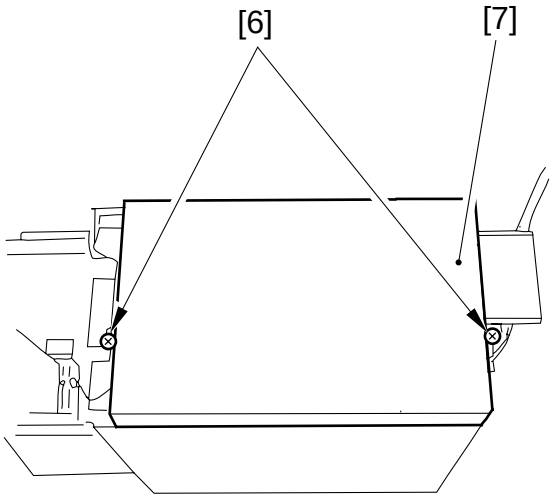


Figure 10-A310

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B. Deck Body

1. Detaching the Deck from the Copier

1) Place a stack of copy paper [3] (about 8 cm in height) on the floor for placement of the deck [2] to prevent deformation of the roll support plate [1].

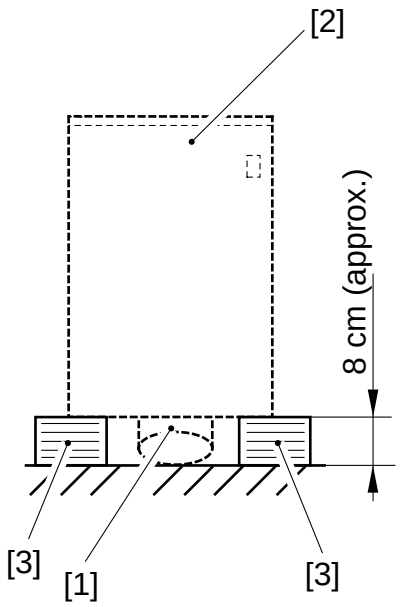


Figure 10-B301

2) Remove the right cover. (See p. 10-24.)

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3) Remove the four screws [5], and detach the deck [6] from the deck base [7].

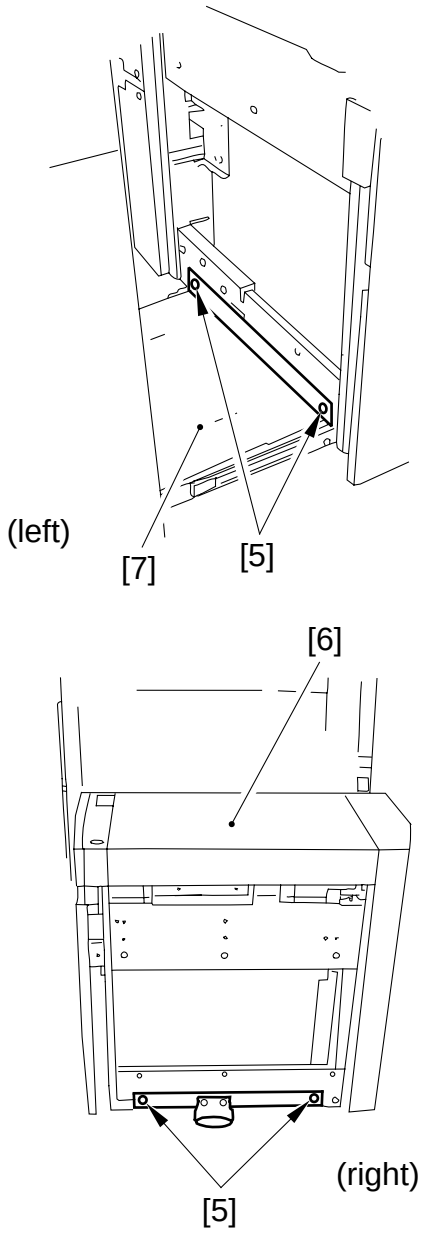


Figure 10-B302

4) Hold the deck [8] as shown, and place it on the stack of paper prepared in step 1).

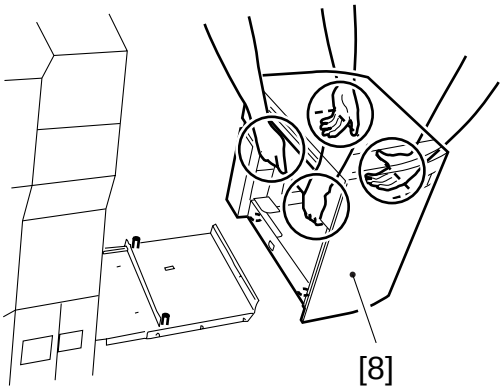


Figure 10-B303

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2. Removing the Compartment

1) Place a stack of copy paper [3] (about 8 cm in height) on the floor for placement of the deck [2] to prevent deformation of the roll support plate [1].

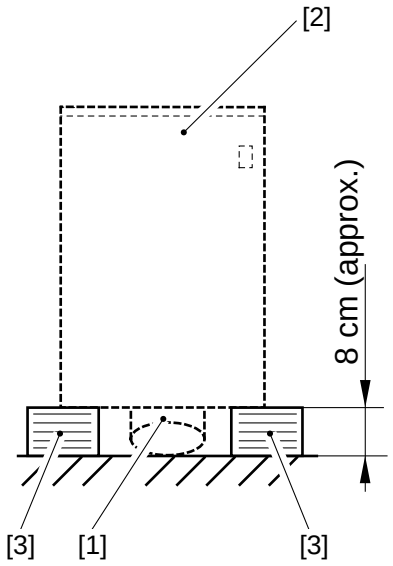


Figure 10-B304

2) Detach the deck from the copier, and push down the latch plate [5] of the compartment [4] to open the compartment [4].

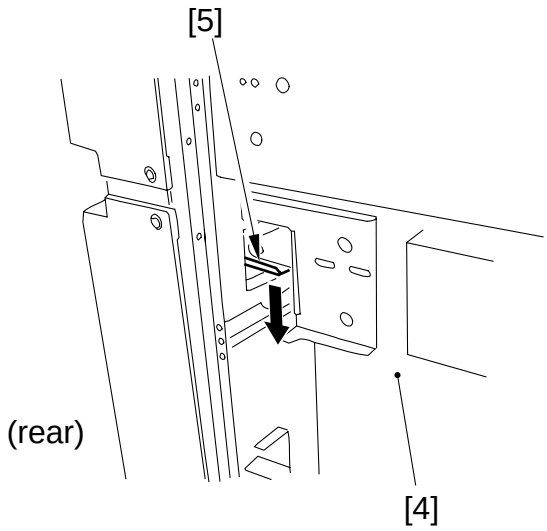


Figure 10-B305

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3) Remove the screw [6] and the stopper plate [7]; then, slide the compartment [8] farther out.

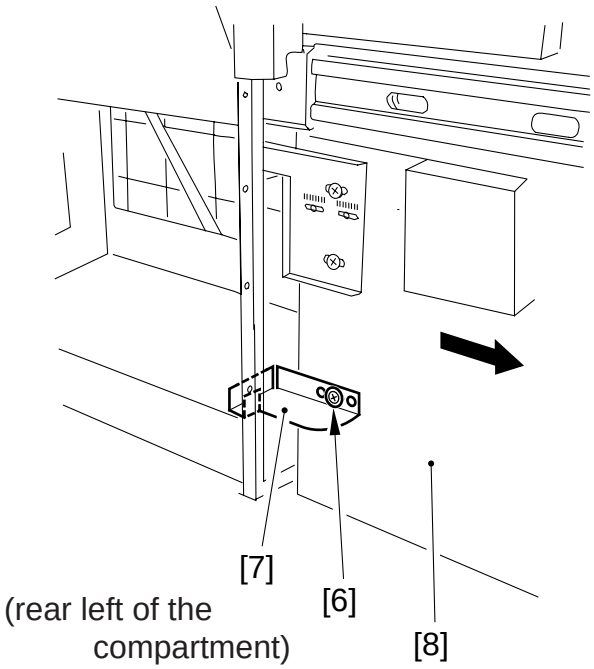


Figure 10-B306

4) Remove the right cover. (See p. 10-24.)
5) Remove the screw [9] of the harness guide, and disconnect the connector [10]; then, remove the three left and right screws (each) [12], and detach the compartment [8] toward the front while lifting it slightly.
6) Place the compartment [8] on the stack of copy paper prepared in step 1).

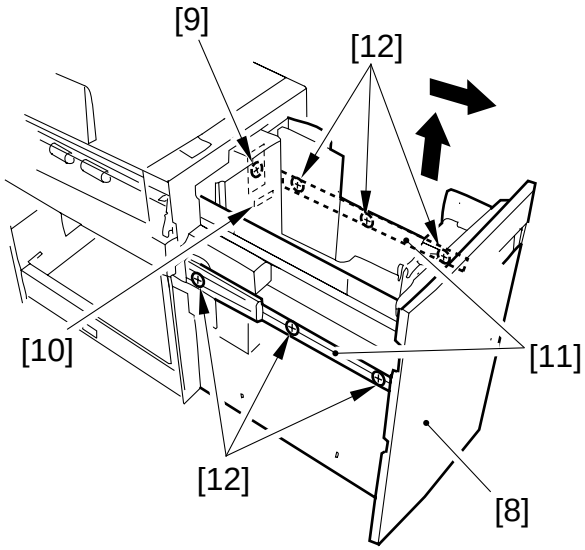


Figure 10-B307

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3. Changing the Deck Paper Size

If the user wishes to change the paper size of the deck, perform the following:

1) Open the compartment of the deck, and remove all paper.
2) If the lifter of the deck is up, turn on the copier's power switch, and push down the sensor lever [2] of the paper supply position sensor inside the compartment [1] to move down the lifter to its lower limit.

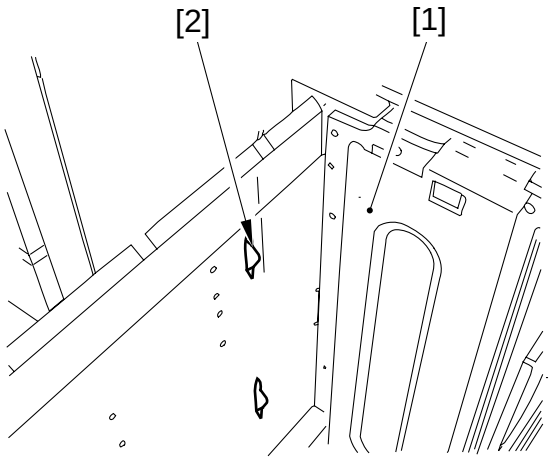


Figure 10-B308

3) Remove the screw [3], and mount the paper trailing edge guide plate [4] to suit the new paper size.
4) Likewise, remove one screw each [5], and mount the left and right guide plates [6] to suit the new paper size.
5) Enter the new paper size in the copier's service mode (OPTION>ACC>DK-P).

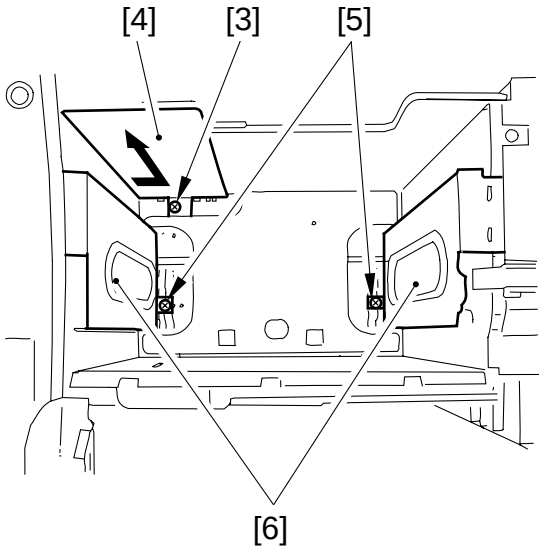


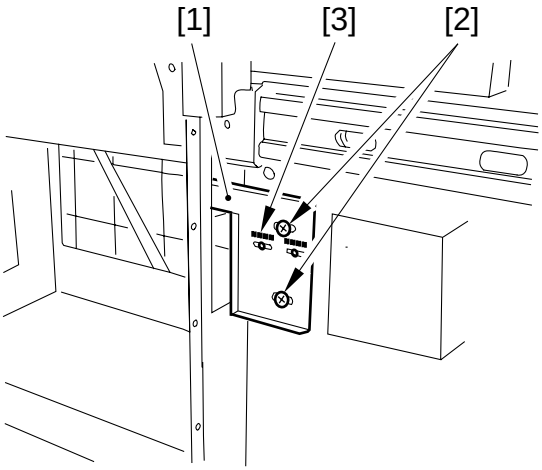
Figure 10-B309

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4. Adjusting the Deck Registration

If the left/right registration (standard of 0 ±1.5 mm) needs to be adjusted, perform the following:

1) Slide out the compartment, and adjust the position of the latch plate [1] of the deck open solenoid (SL102) using the two screws [2]. (At this time, use the scale graduation [3] on the latch plate as a guide.)



(rear left of the compartment)

Figure 10-B310

5. Adjusting the Position of the Roll

If the compartment cannot be opened/closed smoothly, requiring adjustment of the position for the roll mounted to the front of the deck, perform the following:

1) Remove the front cover. (See p. 10-21.)
2) With the compartment fully slid out, turn the four mounting screws [4] on the roll support plate [3] so that the roll [1] is about 3mm from the floor [2]. (Use the scale graduation [5] on the front side plate as a guide.)

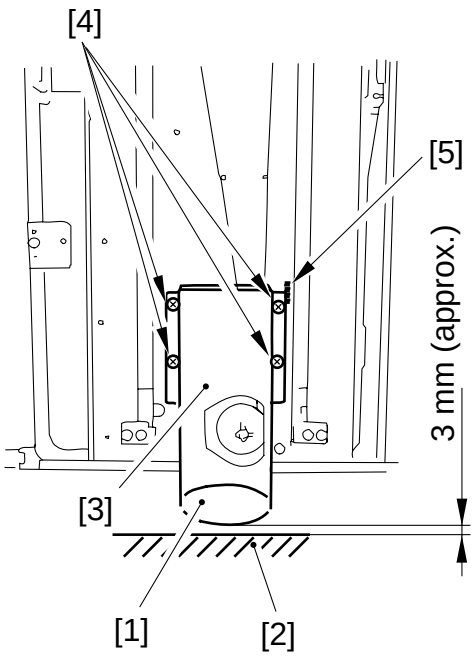


Figure 10-B311

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C. Drive Mechanisms

1. Removing the Deck Pickup Clutch (CL102)

1) Remove the deck pickup unit. (See p. 10-39.)
2) Disconnect the connector [1] and the E-ring [2]; then, detach the deck pickup clutch [3].

Caution:
When mounting the pickup clutch, be sure to put the clutch into the slip stop [4].
Be sure also to hook the harness on the U-groove [5] of the guide.

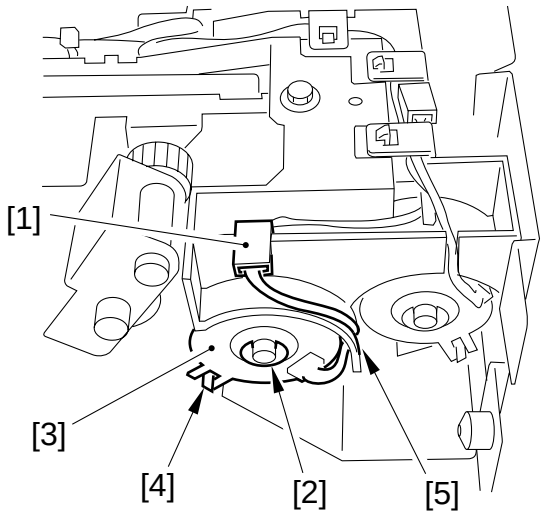


Figure 10-C301

2. Removing the Deck Feeding Clutch (CL101)

1) Remove the deck pickup unit. (See p. 10-39.)
2) Remove the harness retainer [1], and disconnect the connector [2]; then, remove the E-ring [3], and detach the deck feeding clutch [4].

Caution:
When mounting the feeding clutch, be sure to put the clutch into the slip stop [5].

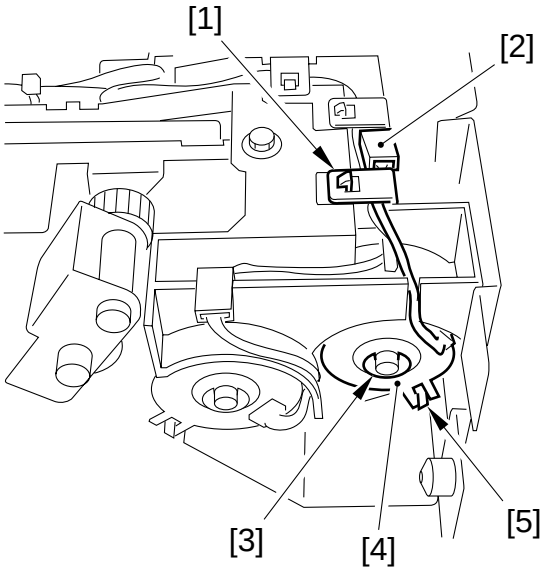


Figure 10-C302

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3. Removing the Deck Main Motor (M101)

1) Detach the deck from the copier, and remove the six screws; then, detach the rear cover.
2) Disconnect the two connectors [1], and remove the four screws [2]; then, detach the deck main motor [3].
   At this time, take care not to damage the gear at the tip of the motor spindle.

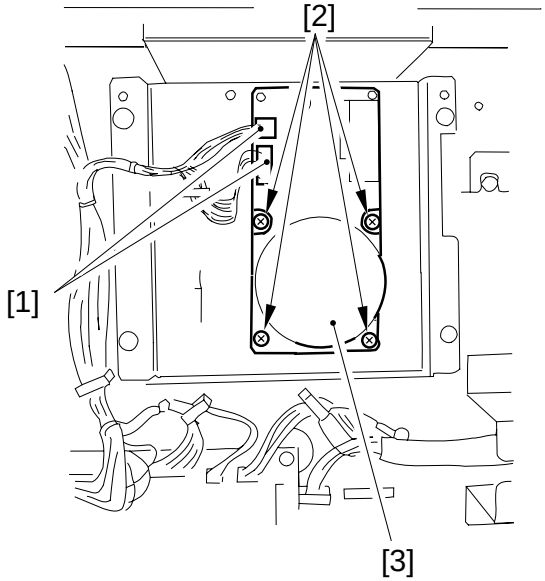


Figure 10-C303

4. Removing the Deck Lifter Motor (M102)

1) Open the compartment of the deck, and remove all copy paper.
2) Turn on the copier's power. If the lifter of the deck is up, push down the sensor lever [1] of the paper supply position sensor. Stop the lifter [2] when it is about 7cm from the base plate of the compartment, and insert a hex wrench into the hole of the lifter drive shaft [3] to hold it in place (thereby preventing it from rotating).

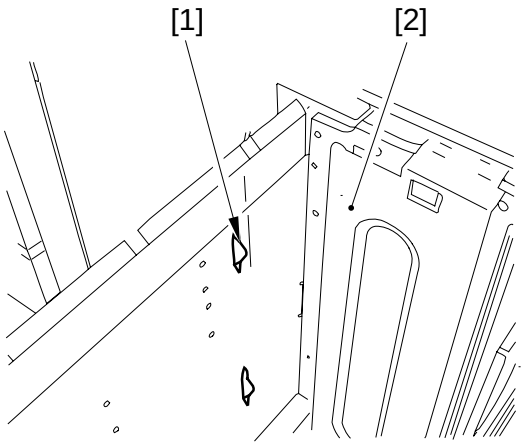


Figure 10-C304

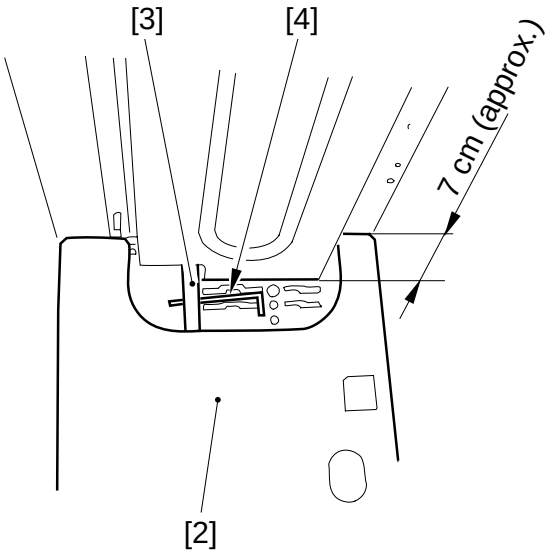


Figure 10-C305

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3) Take out the compartment from the deck. (See p. 10-28.)
4) Disconnect the connector [5], and remove the five screws [6]; then, detach the deck lifter motor unit [7].

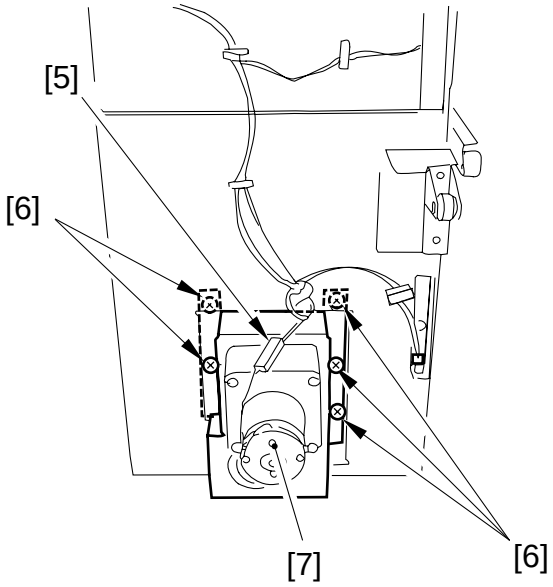


Figure 10-C306

5. Removing the Lifter Cable (front of the deck)

1) Open the compartment of the deck, and remove all paper.
2) Remove the screw, and detach the paper trailing edge guide plate from inside the compartment.
3) Push the lever [1] of the paper supply position sensor inside the compartment to move down the lifter; when the holes on the left and right of the compartment side plate and the holes on the left and right of the lifter match, insert two long screwdrivers [2] through the holes to hold the lifter in position.

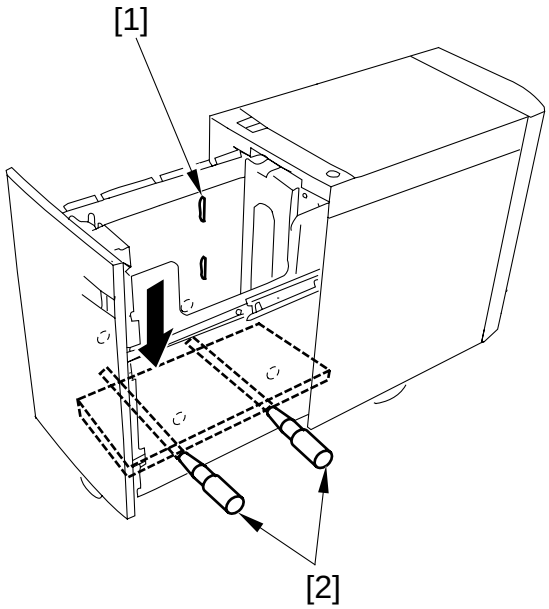


Figure 10-C307

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4) Remove the front cover of the deck. (See p. 10-21.)
5) Remove the four screws [3], and detach the roll support plate [4].

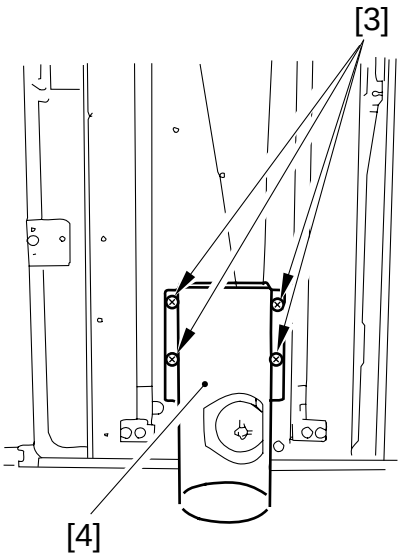


Figure 10-C308

6) Remove the coupling shaft [5] and the E-ring [6]; then, detach the pulley cover [7].
7) Remove the two screws [8], and detach the cable fixing plate [9] on the left side; then, detach the lifter cable [10] on the outside.
8) Remove the two screws [11], and detach the cable fixing plate [12] on the right side; then, detach the lifter cable [13] on the inside.
9) To detach the lifter cable [13] on the inside from the pulley [14] on the inside, remove the two set screws [16] on the pulley [15] on the outside, and detach the pulley [15] on the outside.

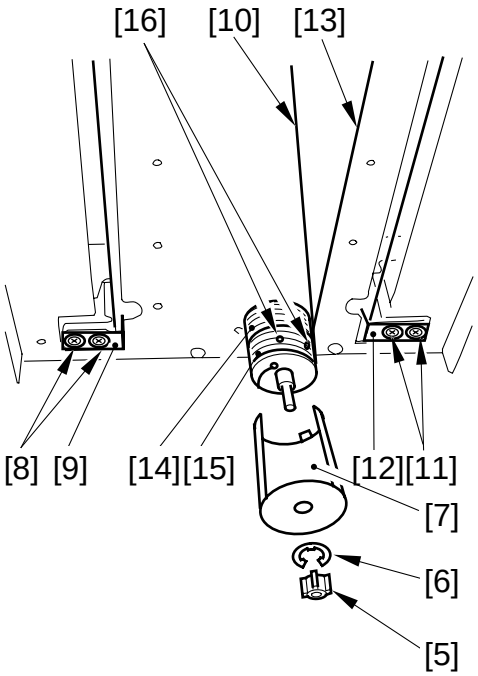


Figure 10-C309

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6. Removing the Lifter Cable (rear of the deck)

1) Open the deck, and remove all paper.
2) Remove the screw, and detach the paper trailing edge guide plate from inside the compartment.
3) Push down the lever [1] of the paper supply position sensor inside the compartment to move down the lifter until the left and right holes in the compartment side plate and the left and right holes of the lifter match; then, insert two long screwdrivers [2] through the holes.
   At this time, match the top surface of the lifter with the marking on the compartment left side plate to facilitate matching the holes.
4) Remove the compartment. (See p. 10-28.)
5) Remove the screw [3], and detach the sensor plate [4].
6) Remove one screw each [5], and detach the sensor cover upper/lower [6].
7) Disconnect the two connectors [7], and remove the five screws [8]; then, detach the metal plate [9].

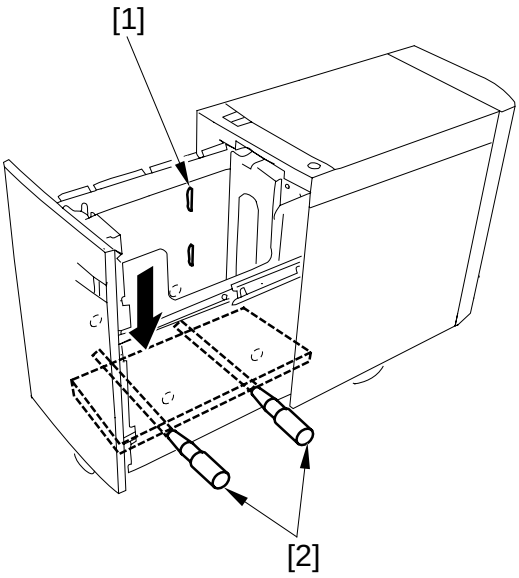


Figure 10-C310

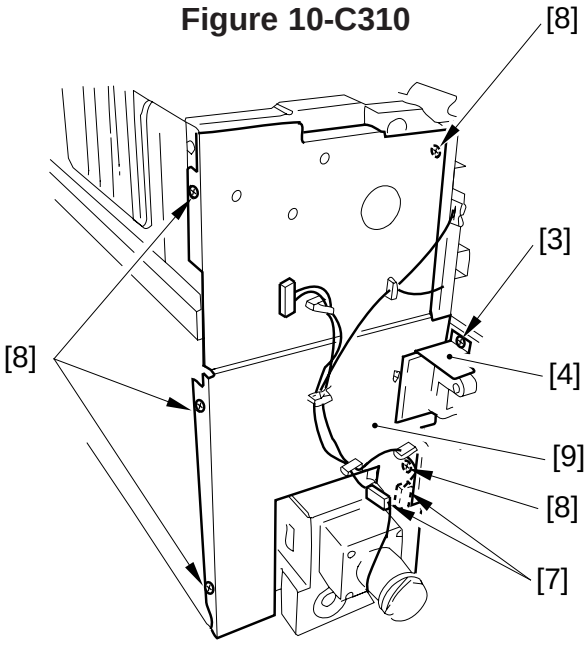


Figure 10-C311

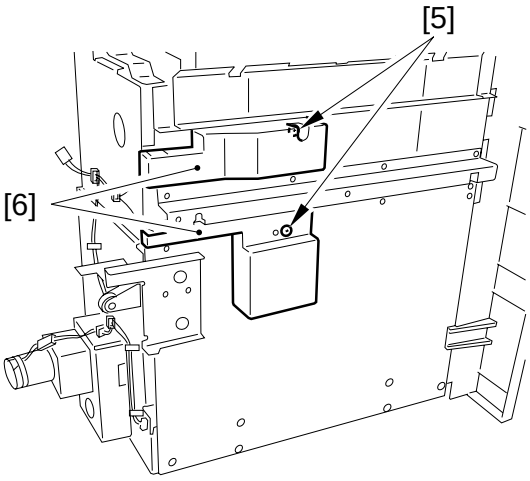


Figure 10-C312

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8) Insert a hex wrench [11] into the hole of the lifter drive shaft [10] to hold it in place (thereby preventing it from rotating).

Caution:
If you fail to prevent the lifter drive shaft from rotating, the lifter cable will become slack as soon as you remove the lifter motor unit.

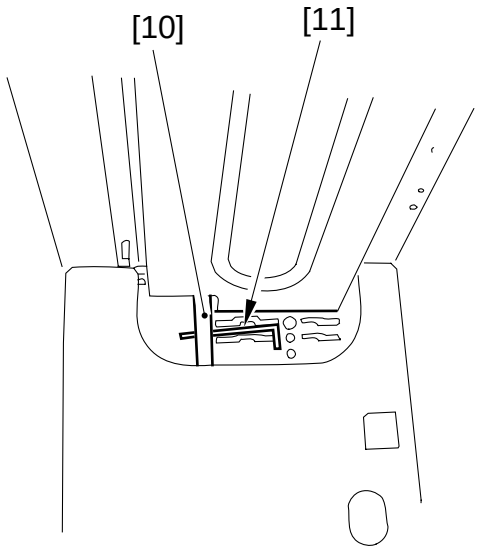


Figure 10-C313

9) Remove five screws [12], and detach the lifter motor unit [13].

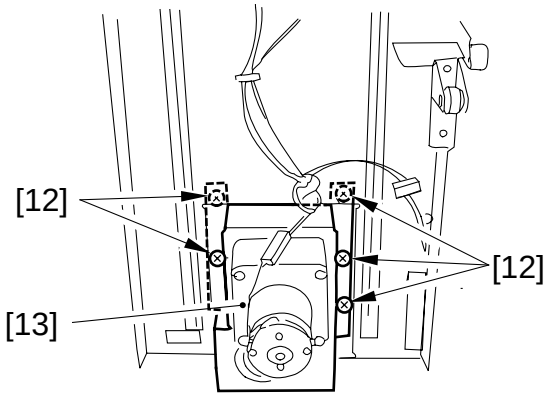


Figure 10-C314

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7. Routing the Lifter Cable

1) Check to make sure that the lifter drive shaft and the lifter are held in place with a hex wrench [1] and long screwdrivers [2].
2) Secure the cable fixing plate [3] to the lifter with two screws.
3) Hook the lifter cable on the upper pulley [4].
4) Hook the ball of the lifter cable on the pulley [5] of the lifter drive shaft; then, wind the cable along the groove of the pulley about 1.5 times. At this time, be sure to keep the lifter cable taut until the long screwdrivers are slightly lifted and stopped.
5) Secure the pulley to the lifter drive shaft with two set screws [6].
6) Mount all pulleys that have been removed back to the lifter drive shaft; then, measure the height from the base plate of the compartment to the top face of the lifter to ensure that the lifter is level.

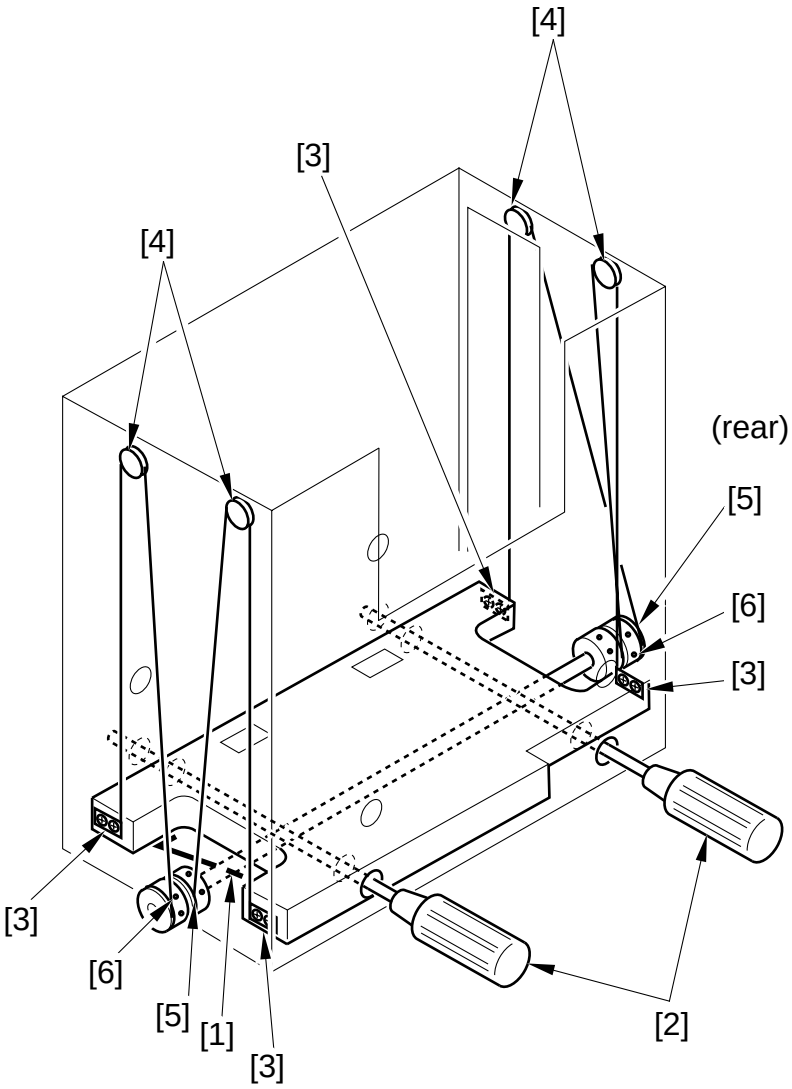


Figure 10-C315

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D. Feeding System

1. Removing the Deck Pickup Unit

1) Remove the upper cover. (See p. 10-25.)
2) Disconnect the two connectors [1], and remove the five screws [2].
3) Remove the deck pickup unit [3].

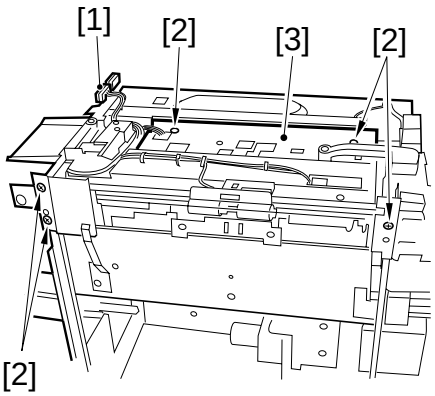


Figure 10-D301

Caution:
When mounting the deck pickup unit [3], be sure to use the three screws shown in Figure 10-D302.

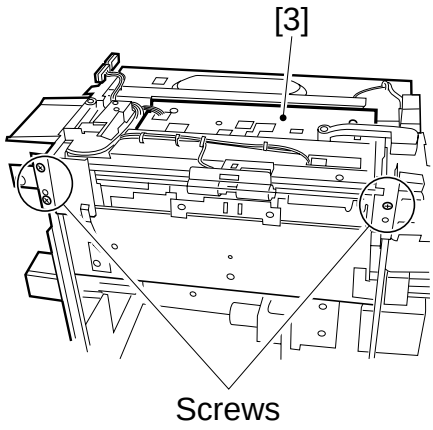


Figure 10-D302

2. Removing the Deck Pickup Roller

1) Remove the deck pickup unit. (See p. 10-39.)
2) Turn over the deck pickup unit; then, remove the resin ring [1] (one each), and detach the deck pickup roller [2].

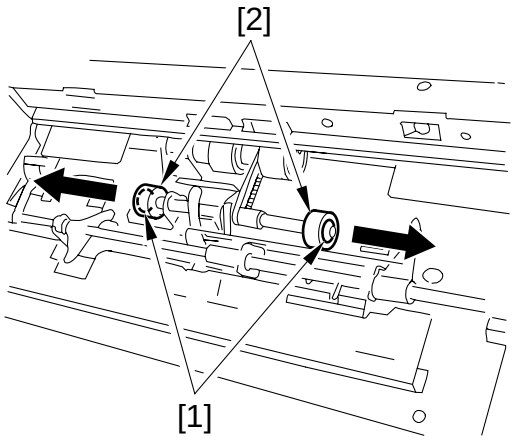


Figure 10-D303

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3. Orientation of the Deck Pickup Roller

When mounting the deck pickup roller [1] at the front, be sure that the marking [2] on the collar (silver) is toward the front and the marking [3] on the side of the roller is toward the rear.

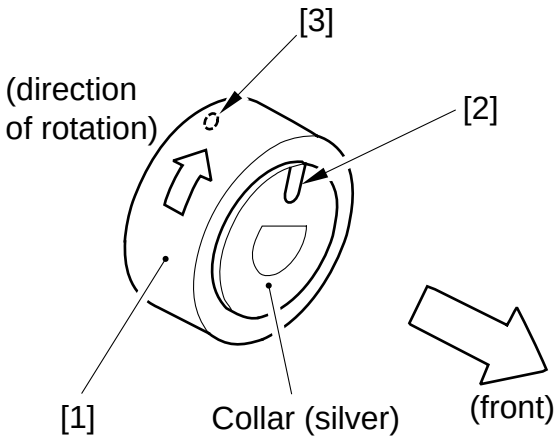


Figure 10-D304a

When mounting the deck pickup roller [4] at the rear, be sure that the marking [5] on the side of the roller and the marking [6] on the collar (silver) are toward the rear.

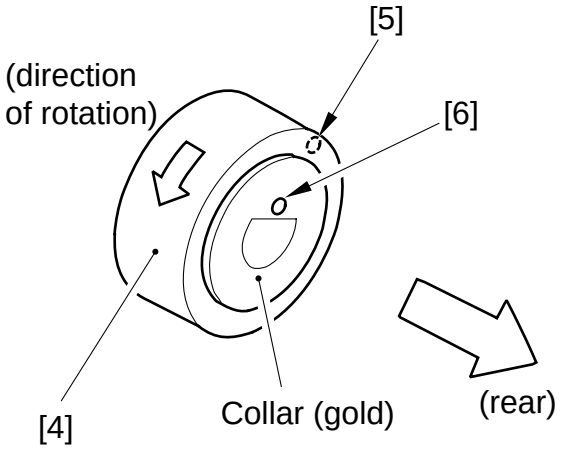


Figure 10-D304b

4. Removing the Deck Pickup/ Feeding Roller

1) Remove the deck pickup unit. (See p. 10-39.)
2) Turn over the deck pickup unit.
3) Remove the resin ring [1], and detach the deck pickup/feeding roller [2] and the drive belt [3] toward the front.

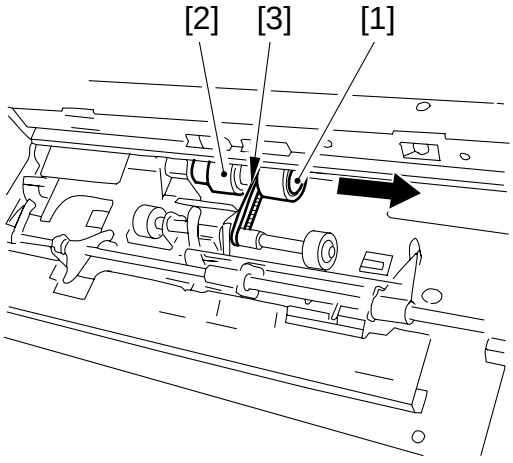


Figure 10-D305

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5. Orientation of the Deck Pickup/ Feeding Roller

When mounting the deck pickup/feeding roller [1], be sure that the belt pulley [2] is toward the front.

When mounting the pickup/feeding roller rubber piece to the pickup/feeding roller shaft, be sure that the marking [3] is toward the rear.

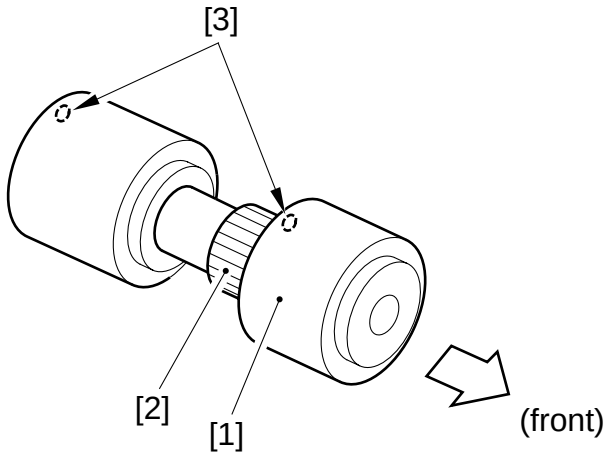


Figure 10-D306

6. Removing the Deck Separation Roller

1) Detach the deck from the copier, and remove the two screws [1]; then, detach the separation roller support plate [2].
2) Remove the joint, and detach the deck separation roller [3].

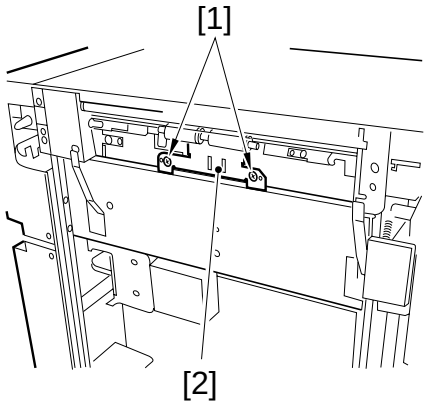


Figure 10-D307a

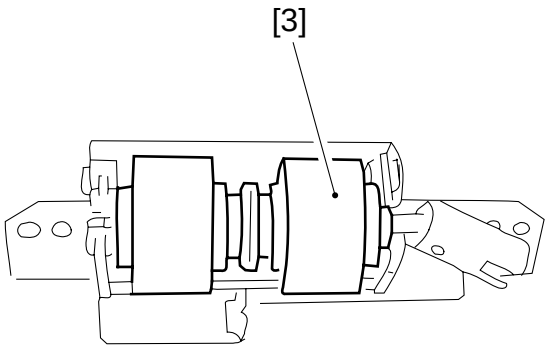


Figure 10-D307b

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Caution:

The urethane sponge used on the deck separation roller changes over time from initial pink to orange and then to yellow, accelerated if exposed to light. This is a general characteristic of urethane sponge, and does not affect its performance, and the part is not identified by color.

7. Adjusting the Pressure of the Deck Separation Roller

If double feeding or pickup failure occurs when the deck is used as the source of paper, change the position of the deck separation roller pressure spring:

- If pickup failure occurs, move the spring in the direction of arrow A.
- If double feeding occurs, move the spring in the direction of arrow B.

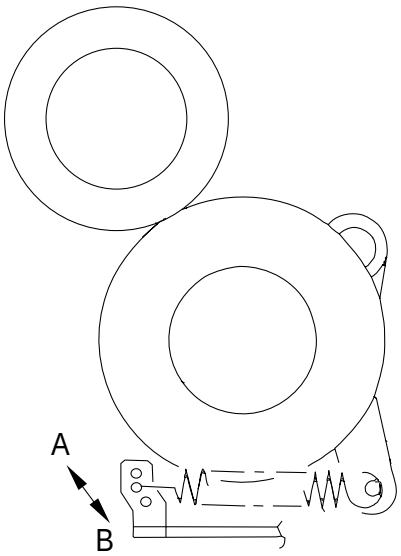


Figure 10-D308

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8. Positioning the Deck Pickup Roller Releasing Solenoid (SL101)

Take note of the position of the two fixing screws [2] used for the deck pickup roller releasing solenoid [1] before detaching it from its support plate with reference to the scale graduations on the plate. Or, mark the position on the support plate with a scriber if you are replacing the solenoid on its own (in this case, be sure to mount it back to its initial position).

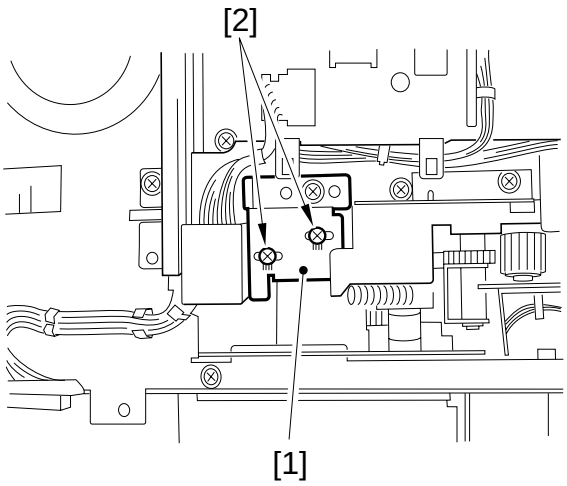


Figure 10-D309

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E. Electrical System

1. Removing the Side Deck Driver PCB

1) Detach the deck from the copier; then, remove the six screws, and detach the rear cover.
2) Disconnect the nine connectors [1], and remove the four screws [2]; then, detach the deck driver PCB [3].

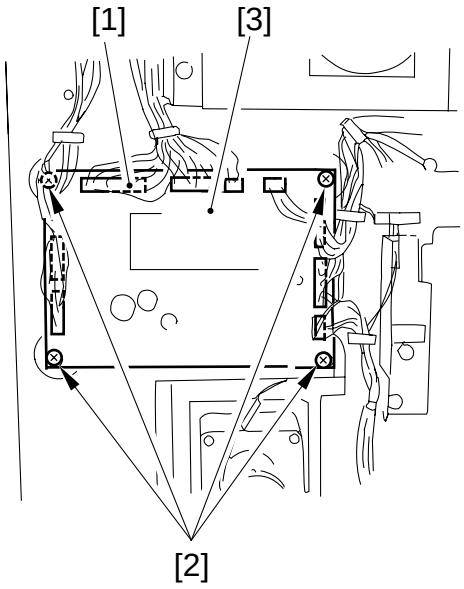


Figure 10-E301

2. Removing the Open Switch PCB

1) Detach the deck from the copier, and push down the latch plate [2] of the compartment [1]; then, open the compartment [1].

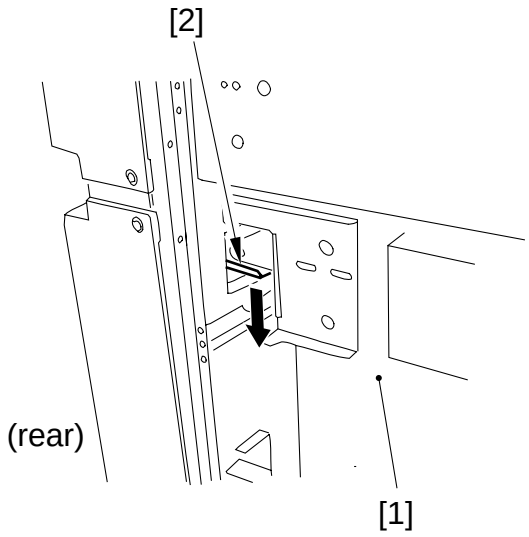


Figure 10-E302

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2) Remove the three screws [3], and disconnect the connector [4]; then, detach the upper front cover [5].

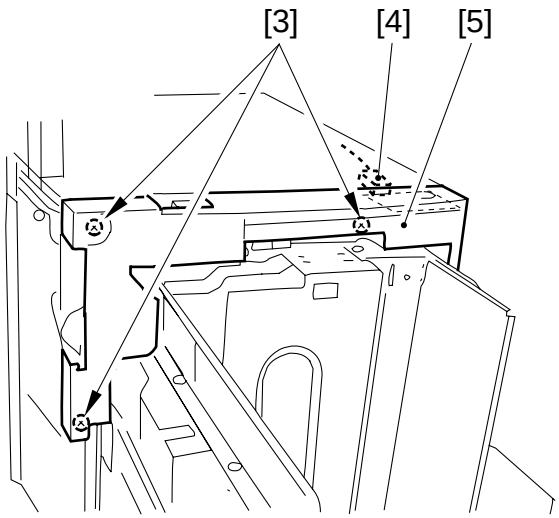


Figure 10-E303

3) Remove the two screws [6], and detach the open switch PCB [7].

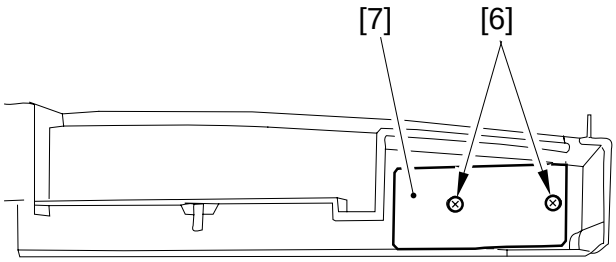


Figure 10-E304

Caution:
When mounting the upper front cover, take care to avoid trapping the harness by the open switch PCB and be sure to connect all connectors.

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CHAPTER 11

INSTALLATION

This chapter provides instructions on how to install the copier and its accessories.

I. SELECTING THE SITE 11-1
II. UNPACKING AND INSTALLATION 11-4
A. Unpacking 11-5
B. Mounting the Scanner 11-8
C. Mounting the Fixing Assembly 11-9
D. Mounting the Corona Assemblies 11-10
E. Checking the Developing Assembly 11-13
F. Mounting the Pick-Up Assembly 11-14
G. Supplying Toner 11-15
H. Mounting the ADF 11-16
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I . SELECTING THE SITE

The site of installation must meet the following conditions; if possible, pay a visit to the user's before the delivery of the copier.

1. There must be a power outlet providing voltage as rated (+10%, -15%) and a means of grounding the copier.

2. The temperature and the humidity of the site must be 15°C to 30°C and 5% to 80%, respectively. In particular, avoid areas near water faucets, water boilers, humidifiers, and refrigerators.

3. The area must not be near sources of fire, and the site must not be subject to dust or ammonium gas. If direct sunshine is expected, provide curtains.

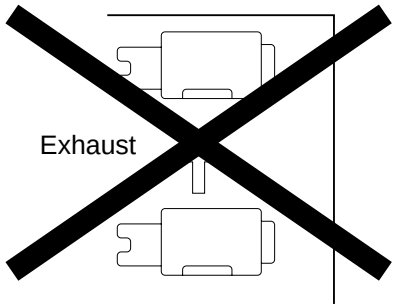
4. The level of ozone generated by the copier will not harm the health of the people working around it. However, some individuals may find the odor unpleasant, and it is important to make sure that the room is ventilated well.

5. The area must ensure that the copier's feet will remain in contact and the copier will remain level.

6. The area must allow adequate space for operating the copier. (The copier must be at least 10 cm away from any wall.)

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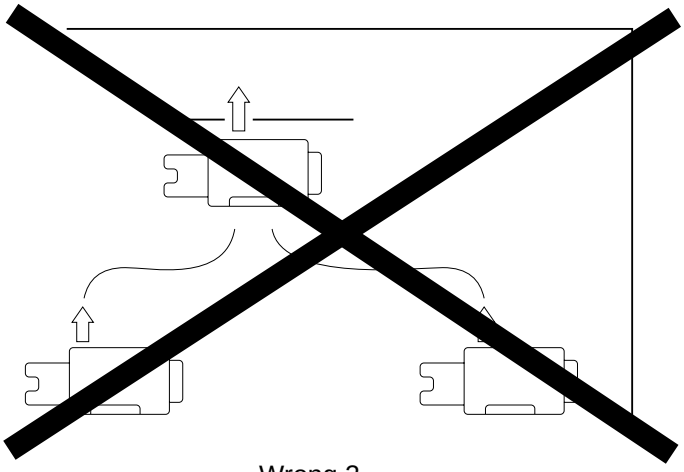
7. The area must have good current of air. If multiple copiers are expected, arrange so that the exhaust from one copier will not be drawn into another. Further, avoid placing a copier near the air vent of the room.



Wrong 1

Figure 11-101

In general, the silicone gas* generated by a copier tends to soil corona charging wires, shortening the wire life. Keep in mind that this is particularly true in a low humidity environment.
*Result of silicone oil evaporating from the fixing assembly.



Wrong 2

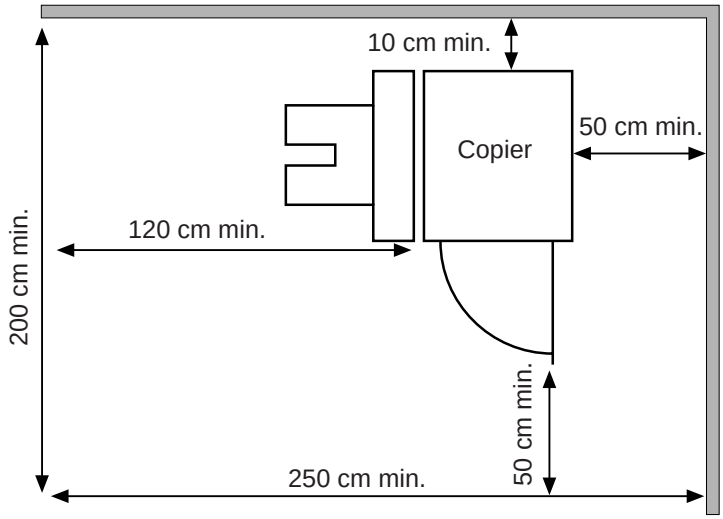
Figure 11-102

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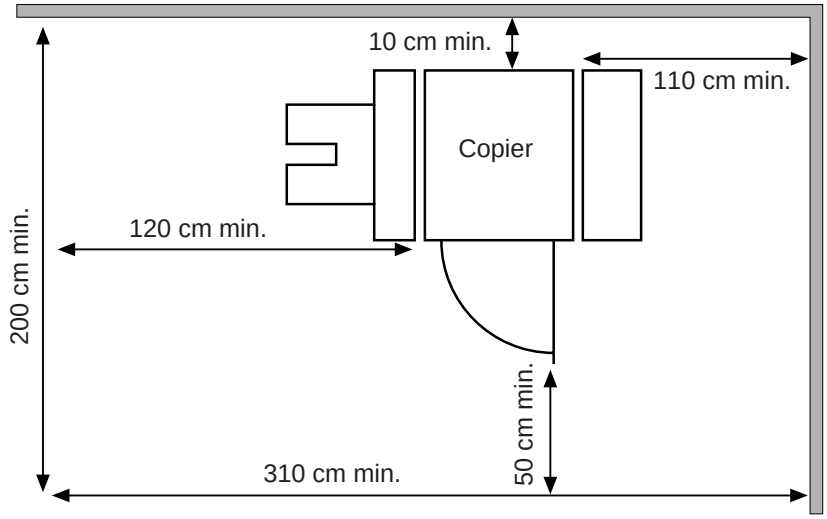
Outline of Work Space

Use the following as a guide when planning a working area.

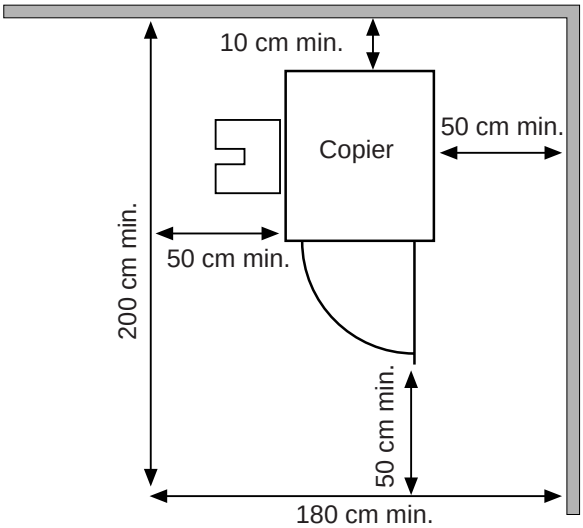
■ Copier + Finisher



■ Copier + Finisher + Side Paper Deck



■ Copier + Copy Tray



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II . UNPACKING AND INSTALLATION

Bringing in a piece of metal from a cold to warm place causes droplets of water to form on its surface. This phenomenon is known as *condensation*, and a copier suffering from condensation can turn out blank copiers.

If you are installing a copier after bringing it from a cold place, leave it alone for at least one hour before unpacking, thereby allowing it to get used to the site temperature.

Caution:

A. Keep the following in mind when using stairs to deliver the copier in or out of the user's:
   1. Remove the fixing/feeding unit, lower feeding path, and copy paper from the copier, and transport them separately from the copier.
      (If the ADF is installed, be sure to remove it also.)
   2. When holding the copier, do not use the hand grips of the pickup assembly/delivery assembly; instead, support it by grasping the four corners of its bottom.

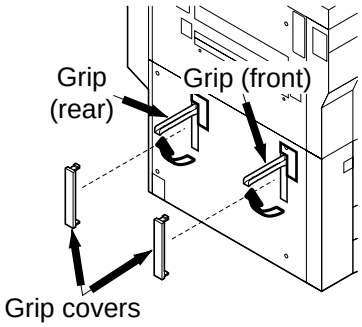
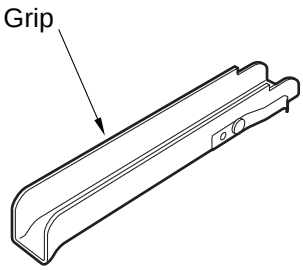
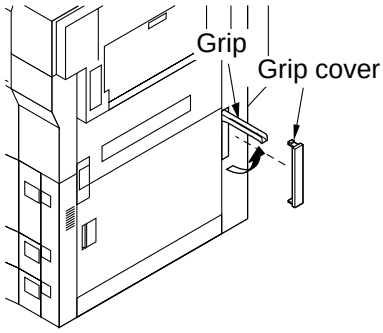
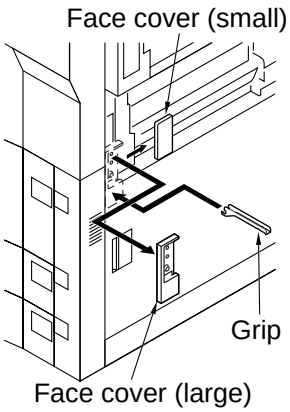
B. Shift up the two adjusters (front) on the copier's bottom to make sure that they are unlocked. Further, take care so that the adjusters will not slip off the copier during transportation.

C. Be sure to work in a group of three persons. When removing the pads, arrange one person at the rear and one person at the front holding a hand grip so that the remaining one person may remove the pads.

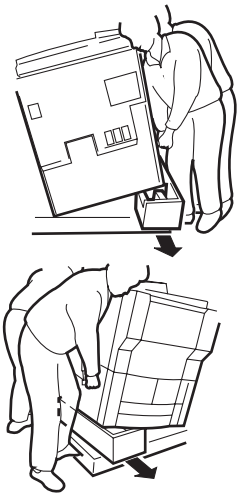
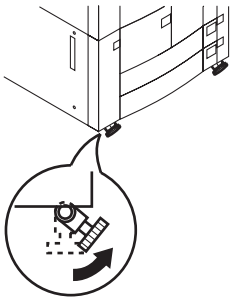
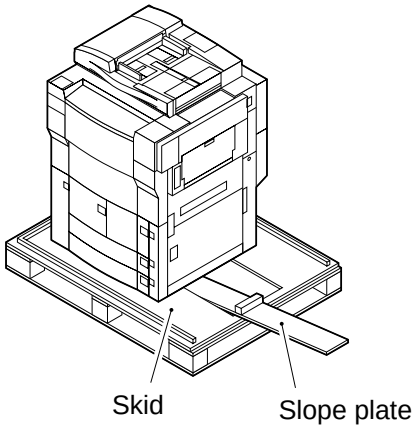
D. Keep the following in mind when moving the copier:
   1. The hand grips are inside the shipping box.
   2. Be sure that each hand grip has been fully inserted before lifting the copier. (The hand grips can slip off. Take extra care.)
   3. The copier weighs about 251 kg. Be sure to work in a group of four when lifting it.

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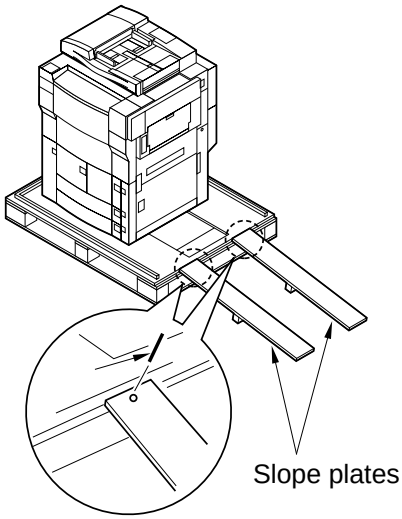
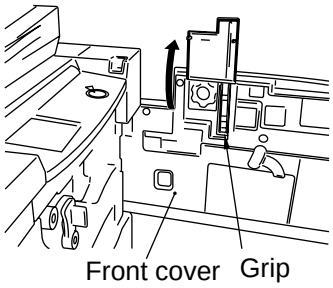
A. Unpacking

No.	Work	Remarks
1	Unpack the copier. Remove the two grip covers (front, rear) on the left side, and shift up the grips.	
2	Take out the grip from inside the shipping box.	
3	Remove the grip cover (rear) from the right side of the copier, and shift up the grip at the rear.	
4	Open the upper right door, and slide the face cover (small) to the rear to remove; then, detach the face cover (large). Push in the grip removed in step 2) into the slot at the front.	

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No.	Work	Remarks
5	Holding the grips on the pick-up side (front, rear), lift the copier slightly, and remove the pad. Likewise, holding the grips on the delivery side, lift the copier slightly, and remove the pad. At this time, be sure to remove the plastic bag.	
6	Shift up the two adjusters (front) on the bottom of the copier, and check to make sure that they are unlocked.	
7	Take out the two slope plates stored in the middle of the skid.	

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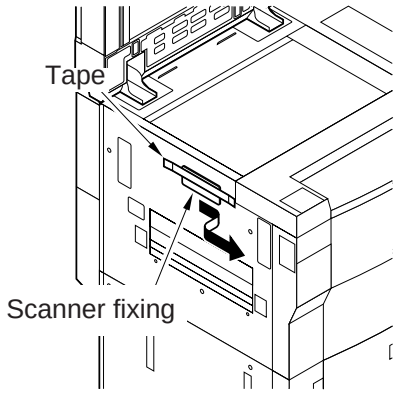
No.	Work	Remarks
8	Turn over the slope plates, and match the pin holes of the skid and the pin holes of the slope plates; then, fit the pins (one each). Holding the grips (front, rear) of the copier, slide the copier down the slope plates off the skid. **Caution:** The pins are taped in place to the slopes.	
9	Open the cardboard box that comes with the copier, and take out the parts and sub members. Check that none of the attachments is missing.	
10	Put away the grip used in step 4) in the compartment behind the front cover.	
11	Mount the face covers (right and left) that have been removed.	

Caution:

Before moving on to the next steps, check to see if there is condensation on the outside or the inside of the copier right after taking it out of its shipping box. If condensation is found, stop the work and wait until the copier has become used to the room temperature.
Start the steps that follow after making sure that the copier is free of condensation.

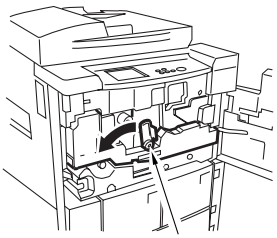
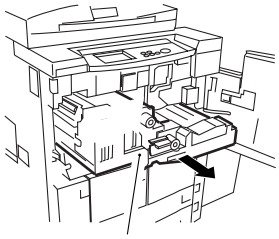
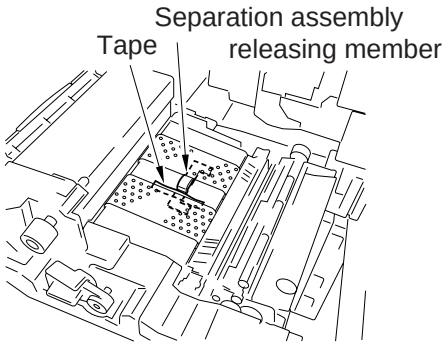
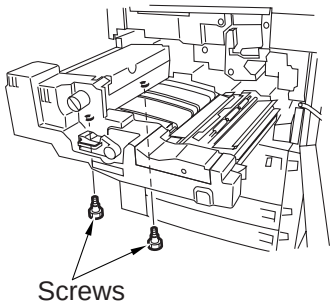
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B. Mounting the Scanner

No.	Work	Remarks
1	Remove the packaging tape from the copier.	
2	Open the ADF. Remove the protective pad of the copyboard glass.	
3	Slide the scanner fixing to the front to remove. (Store away the metal fixing for possible future relocation of the machine.)	

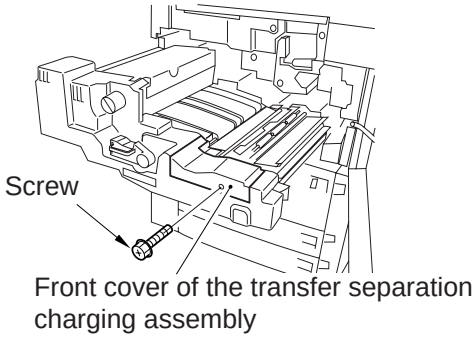
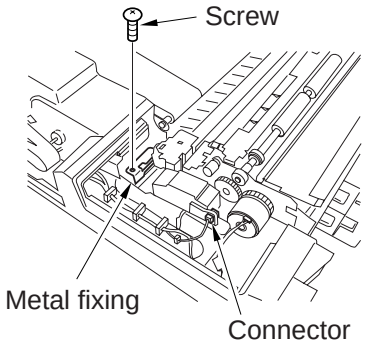
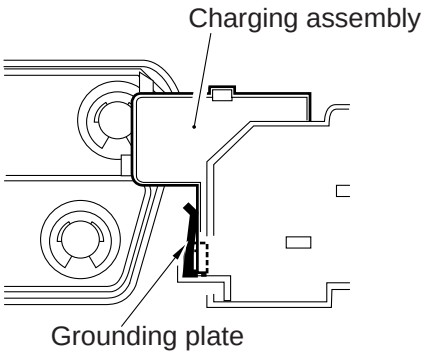
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C. Mounting the Fixing Assembly

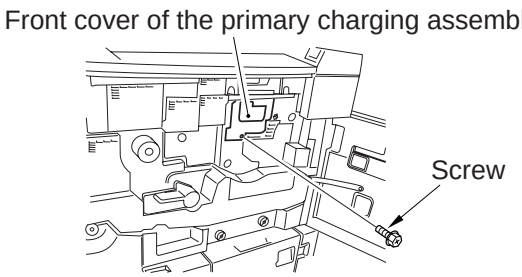
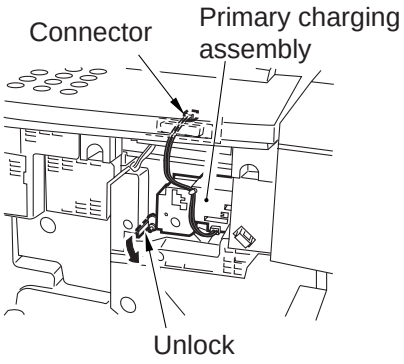
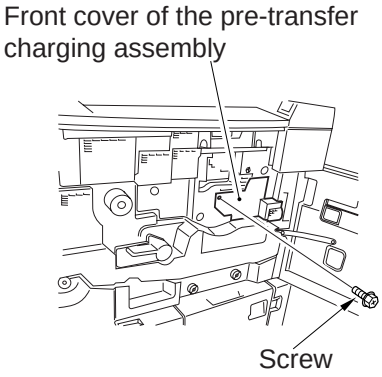
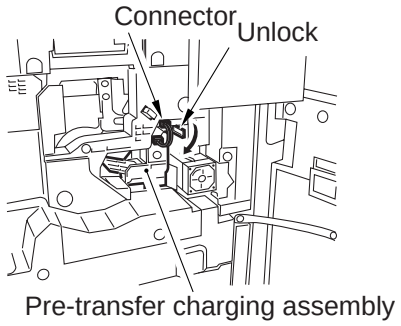
No.	Work	Remarks
1	Open the front door.	
2	Shift down the fixing/feeding assembly releasing lever in the direction of the arrow (left), and unlock the transfer/ separation charging assembly. Slide out the fixing/feeding unit to the front.	 Fixing/feeding assembly releasing lever  Fixing/feeding unit
3	Remove the tag and the separation assembly releasing member from above the fixing/feeding assembly. **Caution:** Be sure to remove all traces of glue (from tape) and foreign matter from the feeding belt.	
4	Remove the tag retaining tape, and remove the two fixing nip releasing screws at the front and the rear.	

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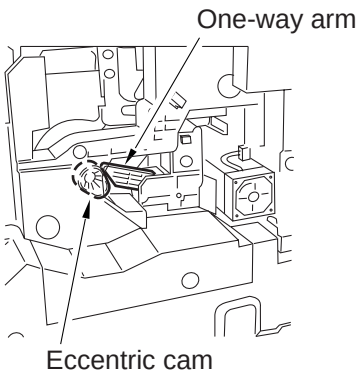
D. Mounting the Corona Assemblies

No.	Work	Remarks
1	Remove the screw, and detach the front cover of the transfer separation charging assembly.	
2	Remove the metal fixing (1 screw), and disconnect the connector. While pressing down on the front and the rear of the transfer separation charging assembly, pull it to the front then to the upper left to remove. Use alcohol solution, and clean the transfer separation charging wire.	
3	Mount the transfer separation charging assembly with the following in mind: • The charging assembly must be completely dry. • The charging wire cleaning member is at the center. • The gut wire is not forced against the transfer guide. • The grounding plate is positioned on the outside of the frame. (See the diagram on the right.)	
4	Connect the connector of the transfer separation charging assembly, and mount the metal fixing.	
5	Mount the front cover of the transfer separation charging assembly with a screw. Push in the fixing/feeding assembly until it locks in place.	

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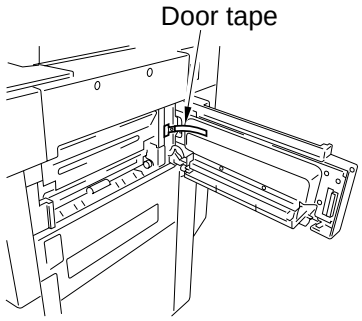
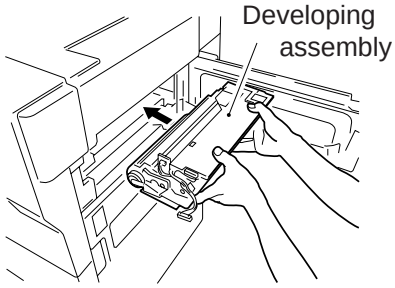
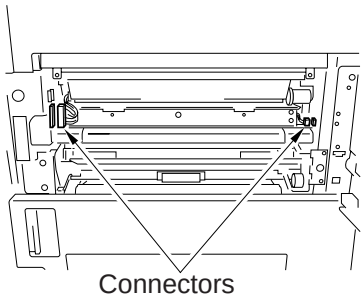
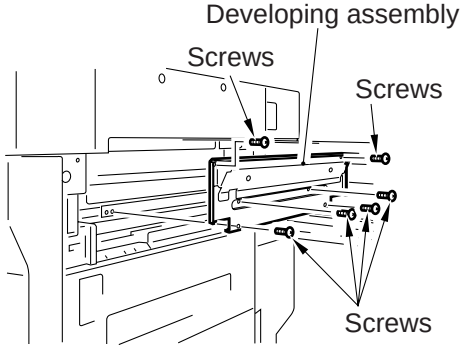
No.	Work	Remarks
6	Remove the screw, and detach the front cover of the primary charging assembly.	
7	Disconnect the connector and unlock the primary charging assembly; then take out the charging assembly. Clean the primary charging wire and the grid wire using alcohol.	
8	Remove the screw, and detach the front cover of the pre-transfer charging assembly.	
9	Disconnect the connector; then, unlock the pre-transfer charging assembly, and take out the charging assembly. Clean the pre-transfer charging wire with alcohol.	

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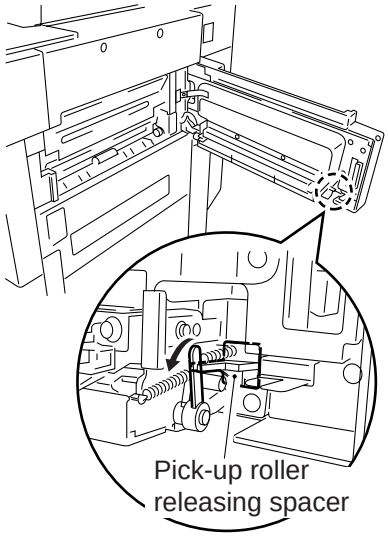
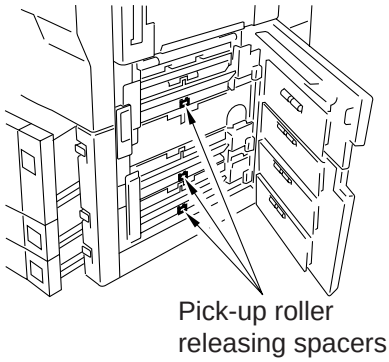
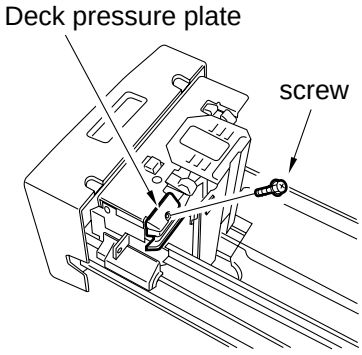
No.	Work	Remarks
10	While keeping the lock released, push in the primary charging assembly, and connect the connector.	
11	With the lock released, insert the pre-transfer charging assembly, and connect the connector. **Caution:** Check to make sure that the one-way arm of the transfer charging assembly is on top of the eccentric cam.	
12	Mount the primary charging assembly cover and the pre-transfer charging assembly cover with one screw each.	
13	Close the front door.	

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E. Checking the Developing Assembly

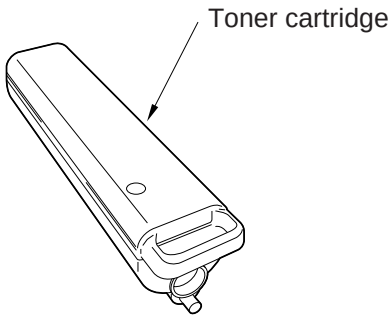
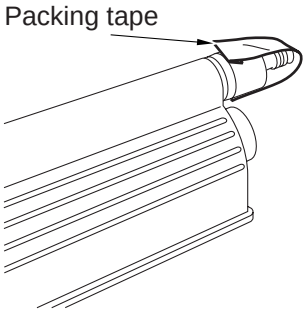
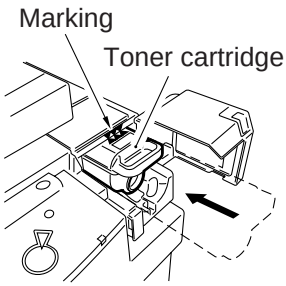
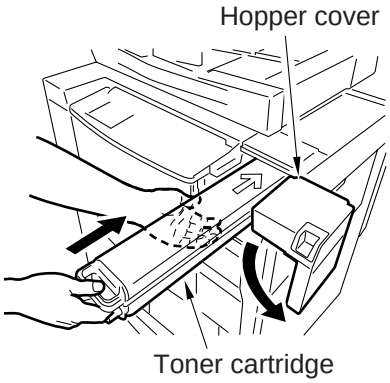
No.	Work	Remarks
1	Open the multifeeder tray, and remove the screw from the door tape.	
2	Take out the developing assembly from the shipping box that comes with the copier. Turn the developing assembly cylinder gear by hand, and check the cylinder surface for damage.	
3	Holding the center of the developing assembly (pocket of the grip), mount it in the copier. Then, connect two connectors. **Caution:** When mounting the developing assembly, try inserting it from high above, taking care not to bring the developing cylinder into contact with the metal plate of the developing assembly base.	 
4	Secure the developing assembly locking unit in place with six screws (M4 × 6; black; attachment).	
5	Mount the door tape of the multifeeder with a screw.	

F. Mounting the Pick-Up Assembly

No.	Work	Remarks
1	Open the multifeeder door, and shift the lever in the direction of the arrow. Then, take out the pick-up roller releasing spacer.	
2	Open the upper right door and the lower right door. Then, push the releasing button of the front deck (R), cassettes 3 and 4, and slide them out half way.	
3	Remove the three pick-up roller releasing spacers.	
4	Secure the deck pressure plate to the front deck (left) with an RS tightening screw (M4 × 6; white).	

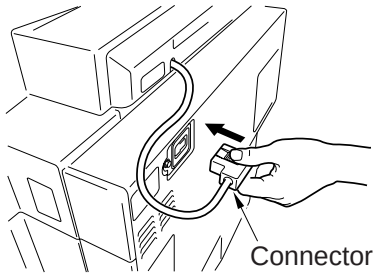
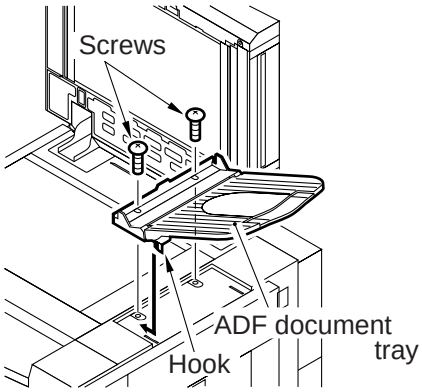
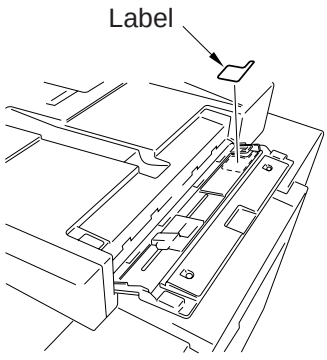
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G. Supplying Toner

No.	Work	Remarks
1	Take out the toner cartridge from the packaging box.	
2	Remove the packing tape	
3	Open the hopper cover, and insert the toner cartridge from the front of the copier. **Caution:** Insert the toner cartridge until the marking ▲of the toner cartridge and the marking ▼of the copier come into contact. 	
4	Close the hopper cover.	

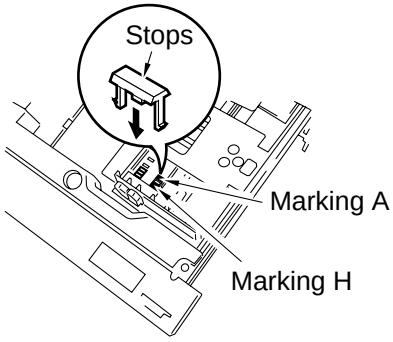
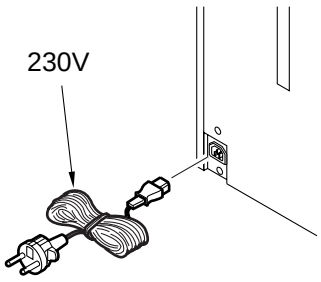
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H. Mounting the ADF

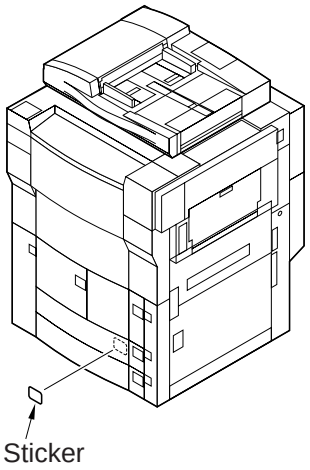
No.	Work	Remarks
1	Remove the face plate of the ADF connector found on the copier's back	
2	Insert the ADF connector into the socket on the back of the copier.	
3	With the ADF open, mount the ADF document tray with two RS tightening screws (M4 × 8; white). **Caution:** When mounting the ADF original tray, fit the hook of the tray in the copier's groove, and slide it to the left before securing it in place with screws.	
4	Attach the ADF manual feed instructions label to the manual feed tray of the ADF.	

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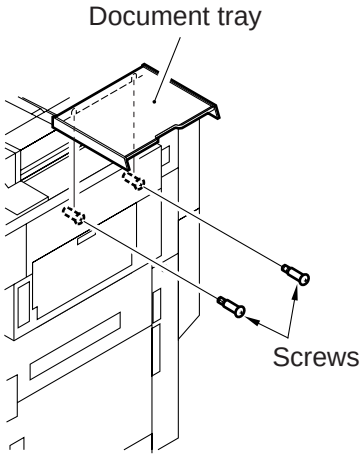
I. Checking Images/Operations (user mode)

No.	Work	Remarks
1	Push the releasing buttons of the cassettes 3 and 4; then, slide out the cassettes to the front, and remove the packing material.	
2	Set the side plates of the cassettes 3 and 4 against the holes (A4/A3) of the marking M. Fit the stops into the holes identified as follows so that the bottom of the cassette will not lift. A: STMT-R H: LTR-R **Caution:** This step applies only if the user does not use Inch-configured paper.	
3	Connect the power plug to the outlet; then, turn on the main power switch and the control panel power switch in sequence. **Caution:** In the case of a 230V model, connect the power plug that comes with the unit to the copier before making checks. 	• Adjust the contrast of the control panel using the control dial on the screen. Inform the user of how the dial may be used. • Check that the Supply Paper indicator has turned on. • Press the keys on the keypad and the Clear key to make sure that the correct copy count is indicated.
4	Place copy paper into the cassettes according to paper size.	**Caution:** If you need to change the size of the deck (R) or (L), see J. "Changing the Size of the Front Deck (right and left)."
5	Attach the size stickers to the paper size plate of the cassettes.	
6	Set each cassette to the copier.	

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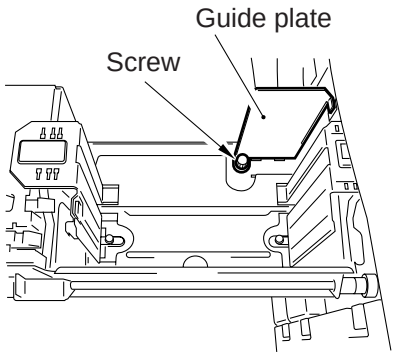
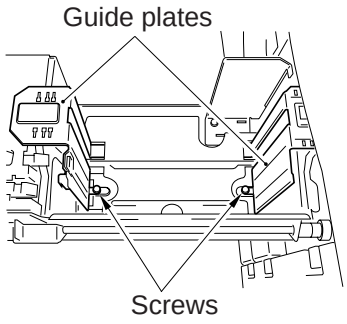
No.	Work	Remarks
7	Attach cassette size stickers to the cassettes to suit the user's needs.	
8	If you are not installing the finisher, mount the copy tray.	
9	When WAIT has ended, start service mode. Control Panel Key Operations Select 'COPIER'. ↓ Select 'FUNCTION'. ↓ Select 'INSTALL'. ↓ Select 'TONER-S'. ↓ Check that the message 'CHECK THE DEVELOPER' is indicated. ↓ After making sure that the developing assembly is properly mounted, press the 'OK' key. ↓ The copier will start toner supply operation (about 10 min). ↓ When the operation ends, press the Reset key twice to end service mode.	Starting Service Mode 1. Press the User Mode key. 2. Press '2' and '8' of the keypad at the same time. 3. Press the User Mode key. **Caution:** Do not turn off the power while the machine is operating.

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No.	Work	Remarks
10	(This step is for the 120V model only.) Perform the following while toner is being supplied. • Mount the document tray to the copier's right using the two stepped screws that come with the unit.	
11	When toner supply operation has ended, place the Test Sheet on the copyboard, and make copies to check copy images. Images on the first ten copies or so may be soiled because of toner falling from the drum separation claws. Soiling should stop as more copies are made. Check to make sure that pick-up operation from each cassette is normal.	• Make sure that there is no abnormal noise. • Check the copy image at each default reproduction ratio. • Make sure that as many copies as set are made. • If a discrepancy is noted between left and right, correct by adjusting the rear height of the primary charging wire. • Make sure that all copying operations are correct.
12	Make double-sided copies to check the operation.	
13	Make settings for standard mode in user mode and service mode to suit the user's needs.	For details of service mode, see the VIII. in chapter 13.
14	Press the Reset key twice to end service mode.	
15	Clean up the area around the copier.	
16	Move the copier to the site of installation, and fix the copier in place using the adjusters.	
17	If you need to install accessories, install them now according to the instructions given in the respective Installation Procedures.	
18	Fill out the Service Sheet.	

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J. Changing the Size of the Front Deck (right and left)

No.	Work	Remarks
1	Press the releasing button, and slide out the deck.	
2	Remove the screw from the rear guide plate, and fix the guide plate in position to suit the new size.	
3	Remove the screw (one each) from the left and right guide plates. Then, fix the guide plates in position to suit the new size.	
4	Put paper in the deck.	
5	Attach the new size sticker to the paper size plate of the deck.	
6	Slide the deck into copier.	
7	Start service mode, and register the new paper size.	For deck (R): COPIER>OPTION>CST> P-SZ-C1 For deck (L): COPIER>OPTION>CST> P-SZ-C2 A4: 6, B5: 15, LTR: 18

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III . RELOCATING THE COPIER

If the copier must be relocated by truck or other means of transportation, perform the following:

No.	Work	Checks	Remarks
1	Make a copy in Direct.		
2	Remove all paper from all cassettes.		
3	Turn off the power switch, and disconnect the power plug from the outlet.		
4	Fix the No. 2 mirror mount in place with the locking plate working through the left cover side.	Check to make sure that the No. 2 mirror mount will not move.	
5	Remove the developing assembly.	Transport the developing assembly separately.	
6	Tape the transfer charging assembly, fixing/feeding unit releasing lever, and lower feeding assembly in place.		
7	Tape the front door, hopper cover, each cassette, and main right door (upper/lower) in place.		
8	Place A3 copy paper on the copyboard glass, and tape the ADF in place.		

Caution:

A. Keep the following in mind when using stairs to deliver the copier in or out of the user's:
   1. Remove the fixing/feeding unit, holding tray, and copy paper from the copier, and transport them separately from the copier.
      (If the ADF is installed, be sure to remove it also.)
   2. When holding the copier, do not use the hand grips of the pickup assembly/delivery assembly; instead, support it by grasping the four corners of its bottom.

B. Shift up the two adjusters (front) on the copier's bottom to make sure that they are unlocked. Further, take care so that the adjusters will not slip off the copier during transportation.

C. When delivering the copier into/out of the user's, be sure to remove the accessories (side paper deck, finisher).

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IV . INSTALLING THE CONTROL CARD V

Check to make sure that the image/ memory lamp is off before turning off the main power switch.

1. Removing the Control Panel

1) Remove the screw (one each), and detach the two magnet plates from the top of the control panel.

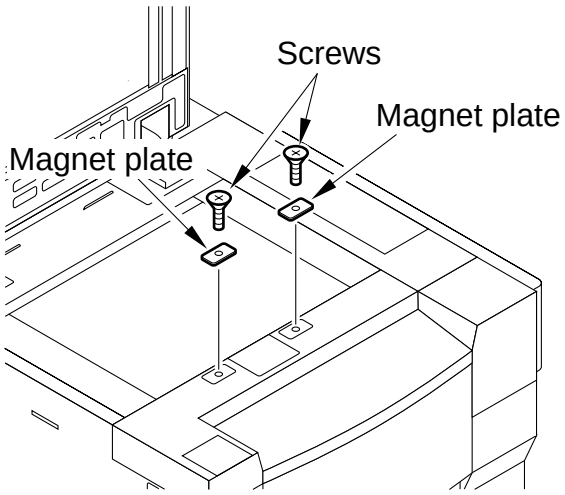


Figure 11-401

2) Remove the screw, and detach the primary charging assembly cover.

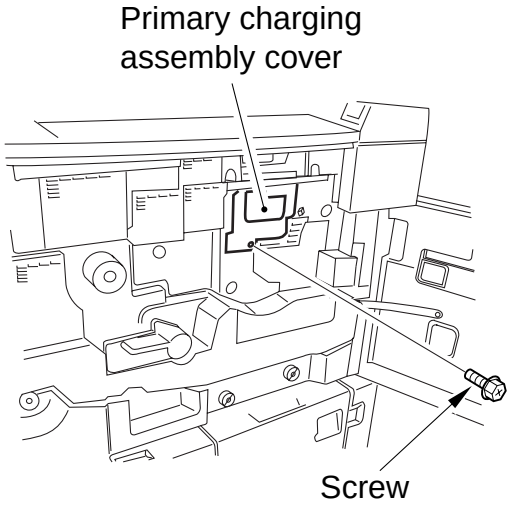


Figure 11-402

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3) Disconnect the two connectors, and detach the dust-proofing glass.

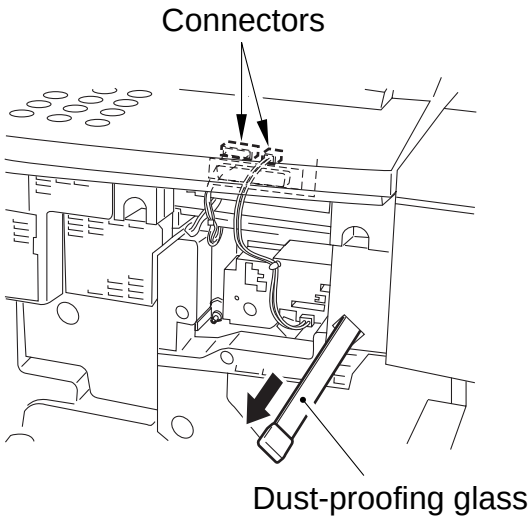


Figure 11-403

4) Slide out the feeding assembly.
5) Remove the four screws, and detach the process unit cover.

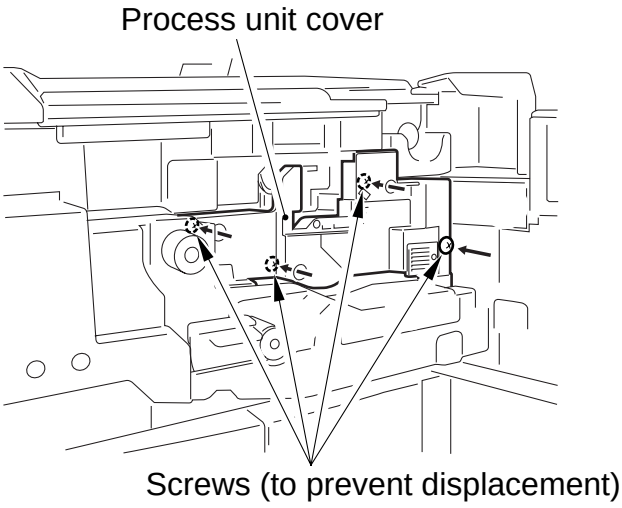


Figure 11-404

6) Remove the five screws, and detach the inside cover (upper).

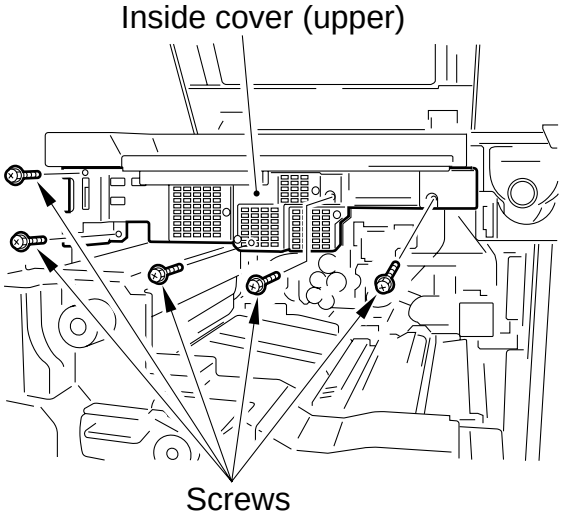


Figure 11-405

7) Remove the tree fixing screws, and detach the control panel.

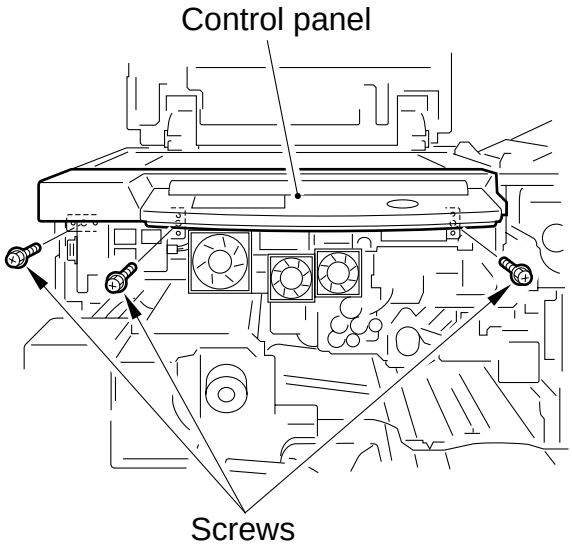


Figure 11-406

2. Before Installing the Control Card

1) Remove the three screws, and detach the control panel back cover.

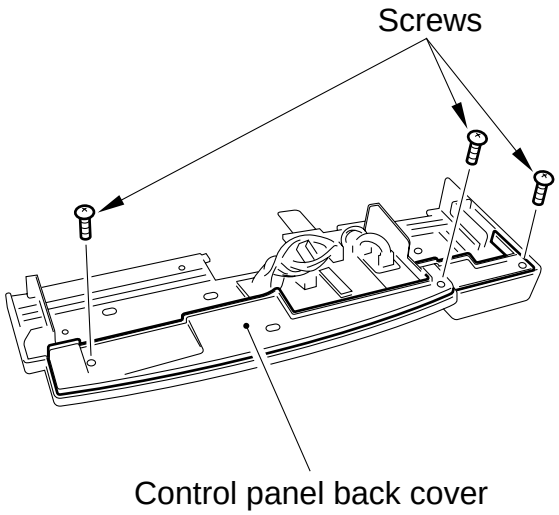


Figure 11-407

2) Remove the screw, and then remove the inlet face plate.

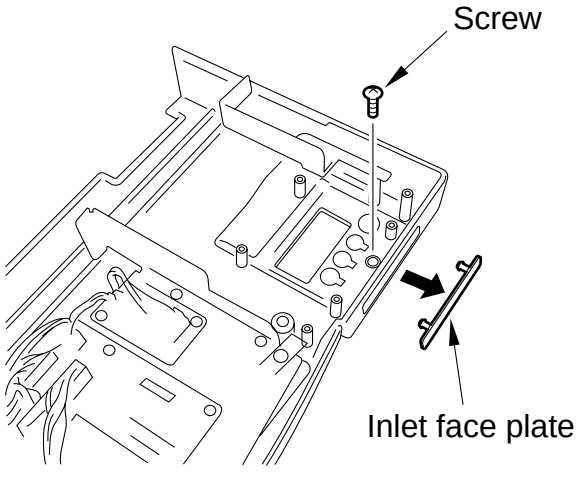


Figure 11-408

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3. Installing the Control Card

1) Secure the control card in place to the control panel with four screws that come with the unit.

Caution:
Secure the control card in place so that it will not come into contact with the control panel cover when a card is inserted through the slot.

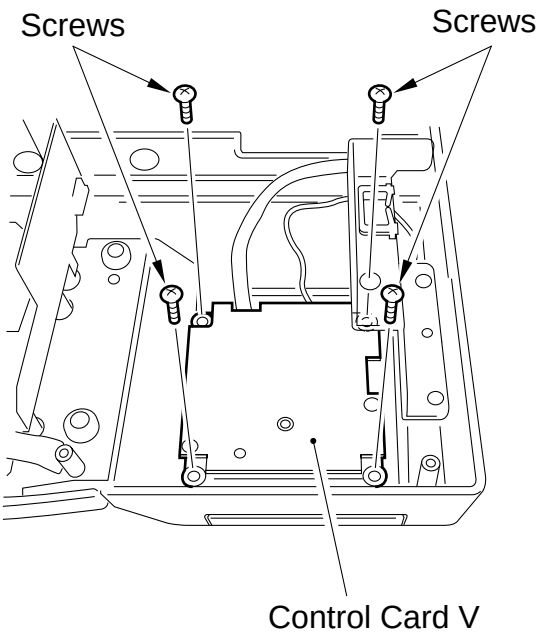


Figure 11-409

2) Lead the grounding wire through the wire saddle, and secure it in place with one screw (w/ washer) that comes with the unit.

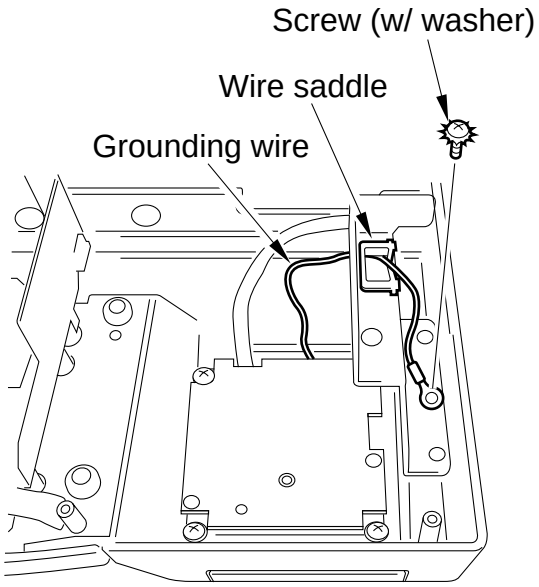


Figure 11-410

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3) Disconnect the shorting connector from the control panel cable; lead the cable of the control card through the wire saddle, and connect it to the connector. (You will not be using the shorting connector.)

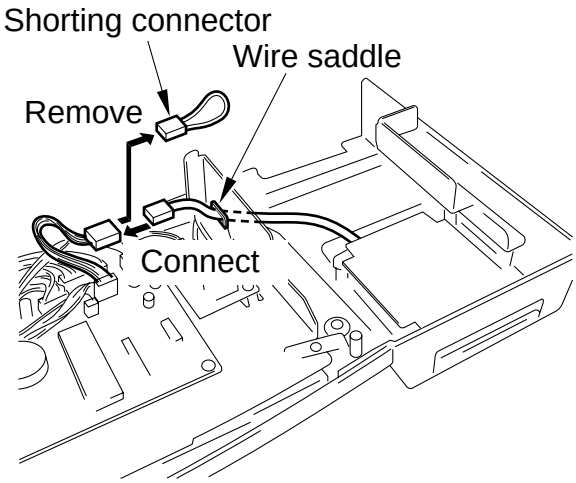


Figure 11-411

4) Secure the control panel in place to the copier.
5) Remove the protective sheet from the control panel label of the control card.
6) Attach the control panel label to the control card.
7) Connect the connectors and mount the covers that have been disconnected or removed.
8) Turn on the copier's main power switch and the control panel switch; then, check the operation of the control card.

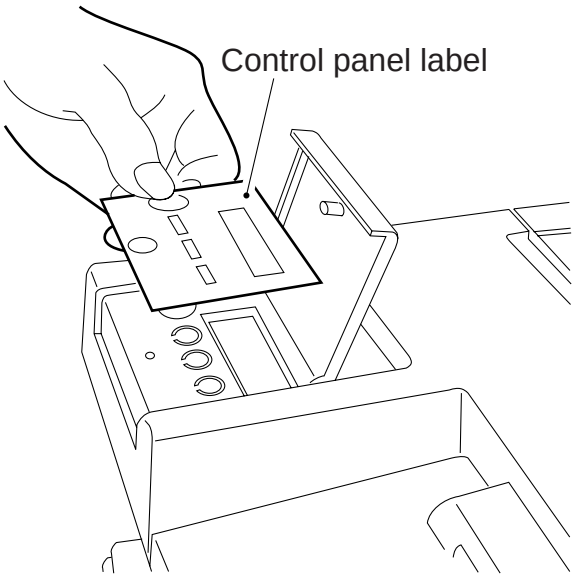


Figure 11-412

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V. INSTALLING THE REMOTE DIAGNOSTIC DEVICE II

Keep the following in mind for the installation:

1. Observe all applicable regulations of the country.
2. Check to make sure that the host copier has been properly installed.
3. Disconnect the copier's power plug before starting the work.
4. Identify the screws by type (length, diameter) and location.
5. Prepare the computer at the service station with the necessary settings.

1) Remove the two screws [2], and detach the upper cover [1] of the controller.

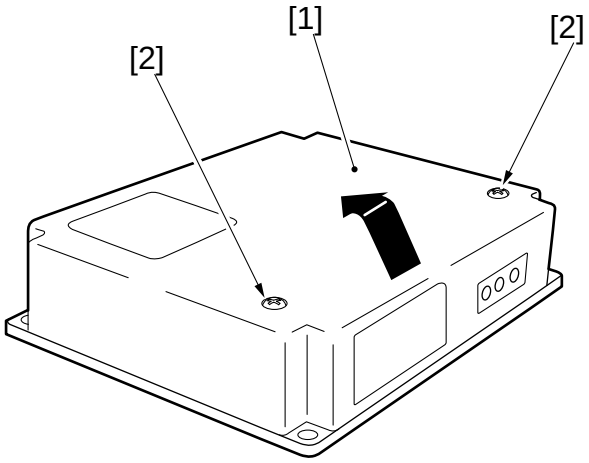


Figure 11-501

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2) Connect the connector [3] of the power supply unit to the connector [4] of the controller as shown.

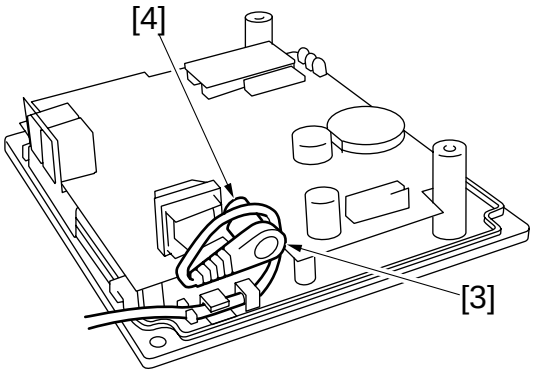


Figure 11-502

3) Remove the four screws [6], and detach the face plate [5] from the copier's rear cover.

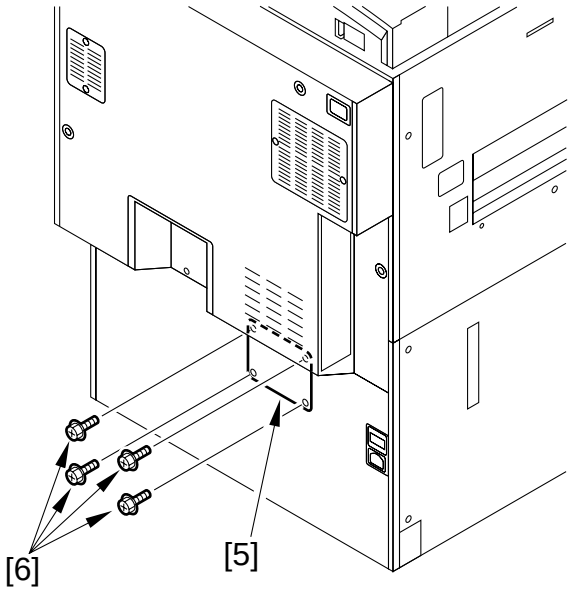


Figure 11-503

4) Connect the connector J521 [7] of the copier and the cable of the controller.

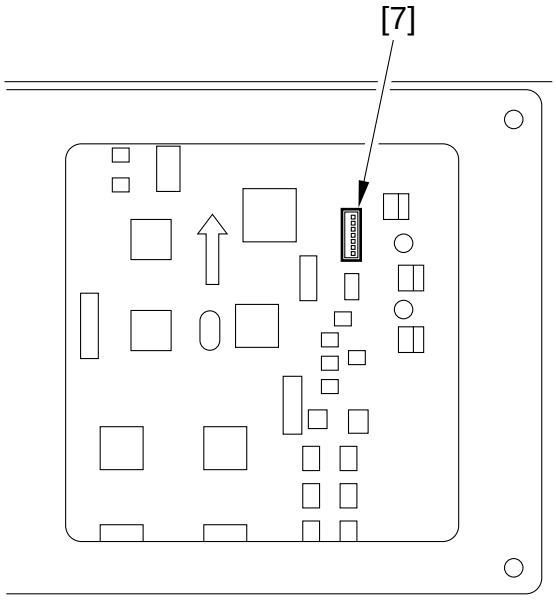


Figure 11-504

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5) Secure the controller in place on the copier's rear cover with four screws [8] (that come with the unit).

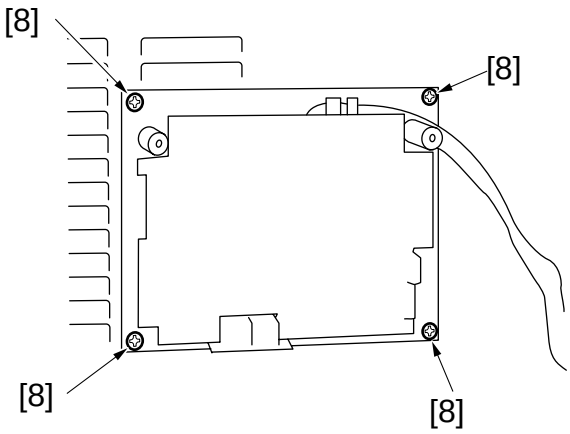


Figure 11-505

6) Remove the slack from the cable between the copier and the controller; bundle the excess length of the cable, and secure it in place with the harness band [9].

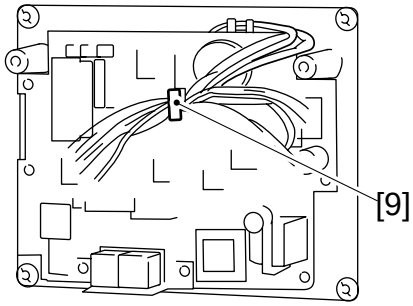


Figure 11-506

7) Shift SW2-4 [10] of the DIP switch to ON (so as to select IPC for communication between controller and copier).

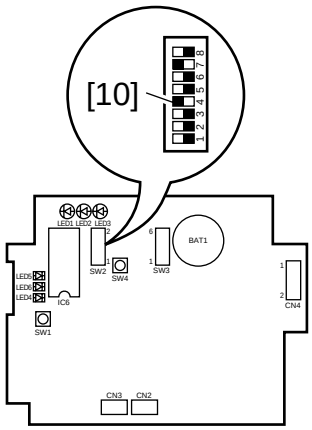


Figure 11-507

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8) If IC6 [11] is mounted on the PCB of the controller, shift SW2-7 of the DIP switch [12] to ON; otherwise, shift the bit to OFF.

Note 1: If the IC6 [11] is not mounted, you need not mount one.
Note 2: If the ROM (IC6) [15] is mounted or if you are replacing it, be sure to shift SW2-7 of the DIP switch [12] to ON.

9) Set the bits of the DIP switch (SW3) [13] on the PCB of the controller as shown in Table 11-501.

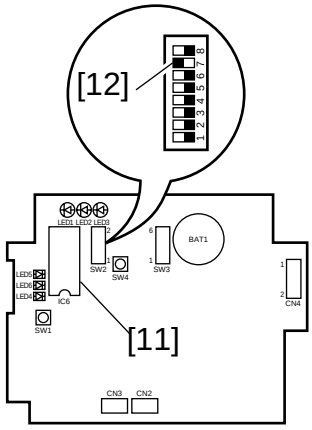


Figure 11-508

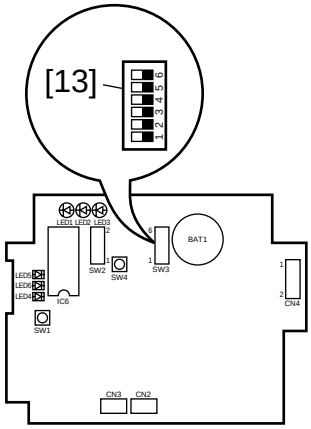


Figure 11-509

Switch	Setting	Description
SW3-1 SW3-2	See right.	<table><tr><th>SW3-1</th><th>SW3-2</th><th>Description</th></tr><tr><td>OFF</td><td>OFF</td><td>Set the modem signal transmission level to -16 dBm.</td></tr><tr><td>ON</td><td>OFF</td><td>Set the modem signal transmission level to -14 dBm.</td></tr><tr><td>OFF</td><td>ON</td><td>Set the modem signal transmission level to -12 dBm.</td></tr><tr><td>ON</td><td>ON</td><td>Set the modem signal transmission level to -10 dBm.</td></tr></table>
SW3-3	OFF	Keep it to OFF at all times.
SW3-4	ON	Sets the line to push pulse.
	OFF	Sets the line to dial pulse.
SW3-5	ON	Sets the dial pulse speed to 20PPS.
	OFF	Sets the dial pulse speed to 10PPS.
SW3-6	—	Not used.

Table 11-501

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10) Connect the power supply unit to the power plug, and check to make sure that LED1 [14] (green) on the PCB of the controller turns on.

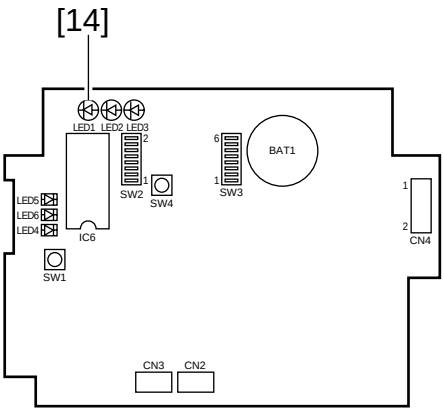


Figure 11-510

11) Execute RAM clear. Set the bits of the DIP switch [15] (SW2) on the PCB of the controller as shown in the following table, and push the push switch [16] (SW4) so that LED5 [17] (red) turns on.

SW2 bits	Setting
SW2-1	OFF
SW2-2	OFF
SW2-3	ON
SW2-4	ON
SW2-5	OFF
SW2-6	OFF
SW2-7	See step 8).
SW2-8	OFF

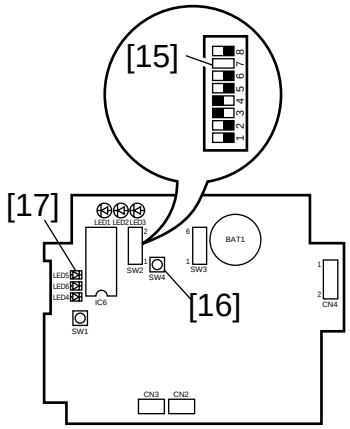


Figure 11-511

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12) When LED [17] (red) has turned on, set the bits of the DIP switch [15] (SW2) on the PCB of the controller as shown in the following table, and push the push switch [16] (SW4) so that LED5 [17] (red) turns off to indicate that the RAM has been cleared.

SW2 bits	Setting
SW2-1	OFF
SW2-2	OFF
SW2-3	OFF
SW2-4	ON
SW2-5	OFF
SW2-6	ON
SW2-7	See step 8).
SW2-8	OFF

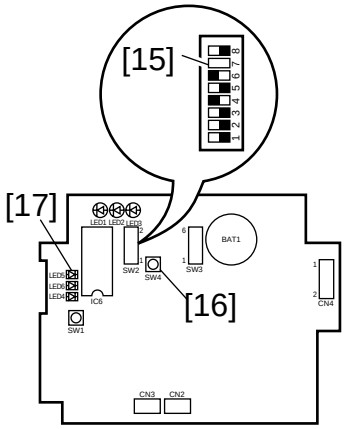


Figure 11-512

13) Shift SW2-6 on the DIP switch [18] on the PCB of the controller to OFF.

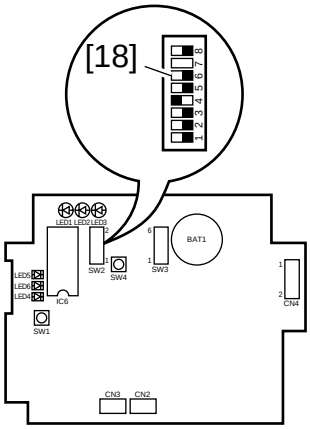


Figure 11-513

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14) Connect the telephone line to the controller.
If the controller is connected on its own, connect the modular jack cable to its connector [19] (LINE).
If the extension function of the controller is to be used, connect the existing telephone or the fax to the connector [20] (TEL) of the controller, and connect the telephone line to the connector [19] (LINE) of the controller.

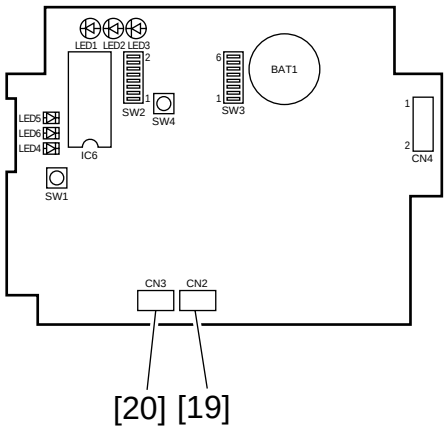


Figure 11-514

15) Call the service station, and ask for initial settings for the controller. (In response to a signal, LED 4 [21] (red) of the controller should start to flash.)

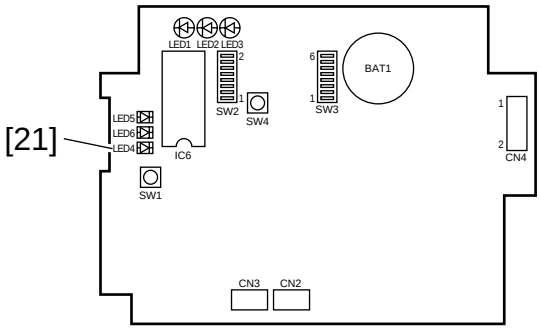


Figure 11-515

16) Call the service station to find out whether the initial settings work has ended. If it ended in failure, repeat steps 11) through 13), i.e., RAM clear, and start initial settings work once again.

Caution:
Be sure to check with the service station to find out whether the settings are correct once again.

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17) Check to find out if the controller is capable of calling the service station. Press the push switch SW4 [16] on the PCB of the controller.
In response, LED6 [22] (red) should turn on; it should turn off to indicate the end of transmission, and should flash if the transmission ends in failure.
If LED6 [22] is flashing, press the push switch SW4 [16] once again to try retransmission.
If the push switch SW1 [23] is pressed while LED6 [22] is flashing, on the other hand, the controller cancels transmission attempts.

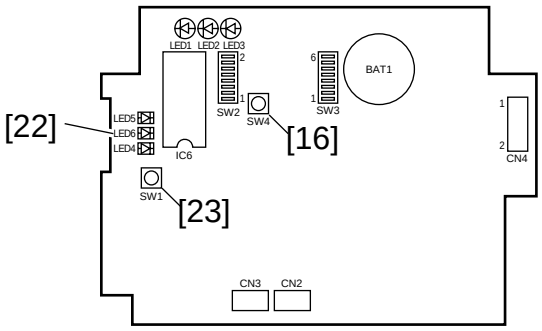


Figure 11-516

18) Check to make sure that the communication between the controller and the copier is normal.
Connect the copier's power plug, and turn on the power switch; then, check to see that LED2 [24] (orange) flashes.

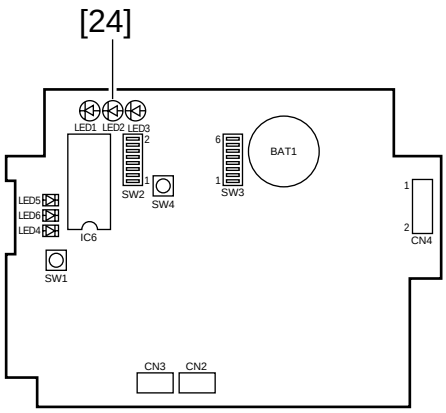


Figure 11-517

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19) Press the copier's Copy Start key, and check to make sure that LED3 [25] (pink) flashes for each delivery.

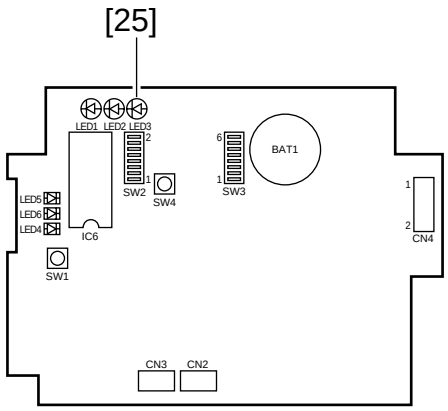


Figure 11-518

20) Attach the switch settings label [26] to the upper cover of the controller, and record the latest switch settings.

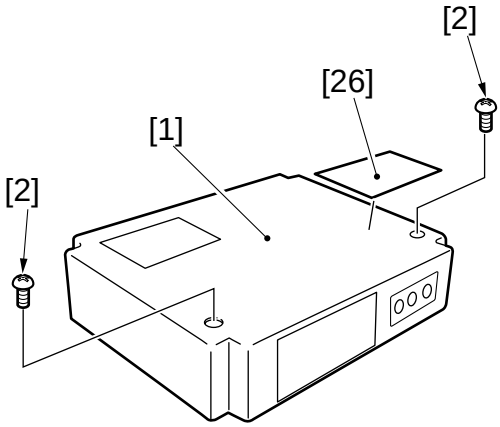


Figure 11-519

21) Secure the upper cover [1] of the controller with two screws [2]. When doing so, check to make sure that the cable of the power supply unit is fitted to the cable guide and it is not trapped by the upper cover [1].

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VI . INSTALLING THE COPY DATA CONTROLLER-A1

A. Setting the Board

1) Remove the two screws [2], and detach the cover [1] of the controller.

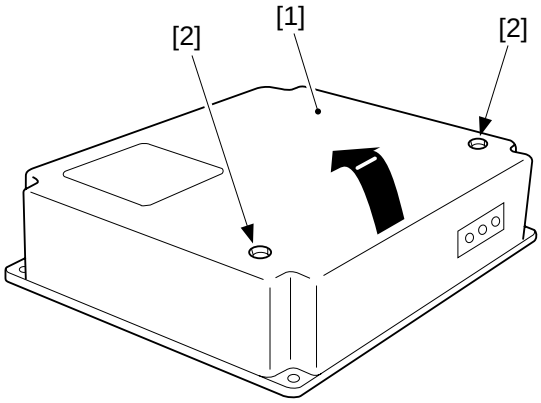


Figure 11-A601

2) Set the DIP switches SW1 and SW5 on the controller to suit the needs of the user.

2.1) Set SW1-4 of the DIP switch to suit the type of the host copier.

2.2) Set SW5-2 DIP switch to suit the appropriate paper size if group control is planned.
To use AB papers (A3, A4, B4, B5), keep the bit to OFF.
To use Inch papers (11×17, LTR, LGL, STMT), keep it to ON.

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	bit	Position	Description	Remarks
SW1	1~3	OFF	For normal operation.	
	4	OFF	For serial communication.	NP6030, NP6060, NP8530, NP9800
		ON	For IPC communication.	Other than above.
	5	ON	For use of a central control device.	Requires the Interface Board-B1.
		OFF	For normal operation or for remote control using a commercially available modem.	For remote control using a commercially available modem, requires a modem and the Interface Board-B1.
	6	ON	For RAM clear.	
		OFF	For normal operation.	
SW5	1	ON	For factory adjustment.	
		OFF	For normal operation.	
	2	ON	For control of Inch papers (11×17, LTR, LGL, STMT).	For controlling paper other than those on the left, make settings in service mode. See C.10. "Checking the Operation."
		OFF	For control of AB papers (A3, A4, B4, B5).	
	3	ON	For service mode.	
		OFF	For normal operation.	
	4	ON	For group control.	*1
		OFF	For no group control.	
	5,6	OFF	Not used.	

*1: Set SW5-4 (DIP switch) to OFF if the Control Card-V is used or remote control only by the Copy Data Controller-A1 is used (i.e., not using ID input, paper size control, toner color control, copy mode control, paper type control).

Table 11-A601

2.3) If group control is not used, shift SW5-4 (DIP switch) to OFF.
To install the Interface Board-B1, Communication Control Board-A1, or Interface Board-A1, see the descriptions under "Setting the Board" in their respective Installation Procedures.

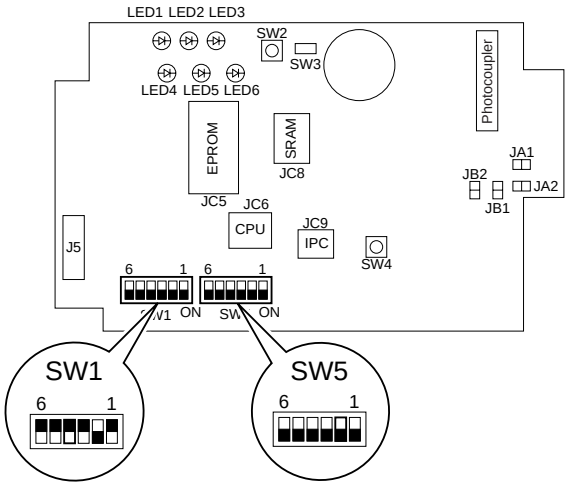


Figure 11-A602

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3) Set the jumper connectors (JA1, JA2, JB1, JB2) on the controller to suit the needs of the user.

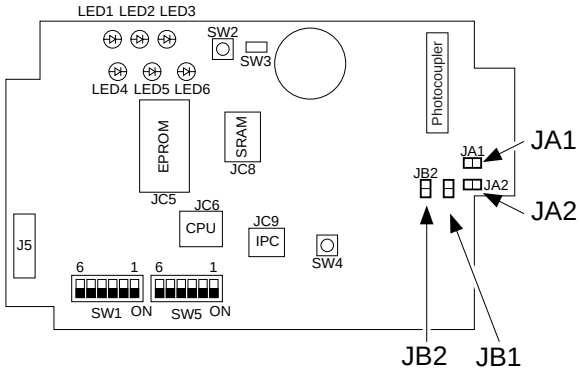


Figure 11-A603

A: If the Communication Control Board-A1 or the Interface Board-B1 is to be connected (requiring the Power Supply-A1).

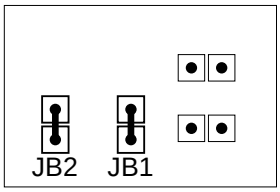


Figure 11-A604

B: If the Communication Control Board-A1 or the Interface Board-B1 is not to be connected (not requiring the Power Supply-A1).

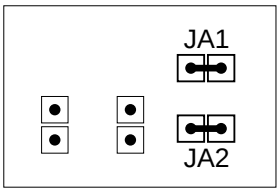


Figure 11-A605

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B. Installing to the Copier

Keep the following in mind for the installation:

1. Observe all applicable regulations of the country.
2. Check to make sure that the host copier has been properly installed.
3. Disconnect the copier's power plug before starting the work.
4. Identify the screws by type (length, diameter) and location.
5. Prepare the computer at the service station with the necessary settings.

1) Remove the four screws [2], and detach the face plate [1] of the copier's rear cover.

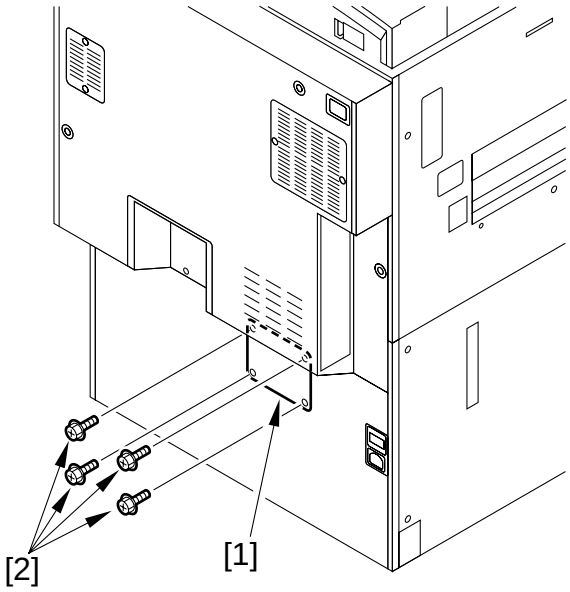


Figure 11-B601

2) If the Card Reader-A1 is to be installed, connect the card reader relay cable (9P) to J4 of the controller.

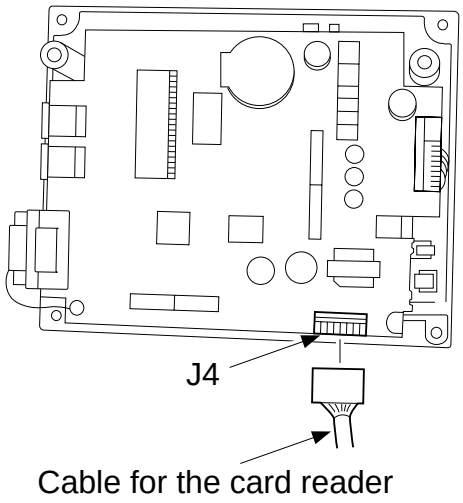


Figure 11-B602

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3) Connect the 8P connector [8] of the controller and the 8P connector [9] (J521) of the copier's DC controller.

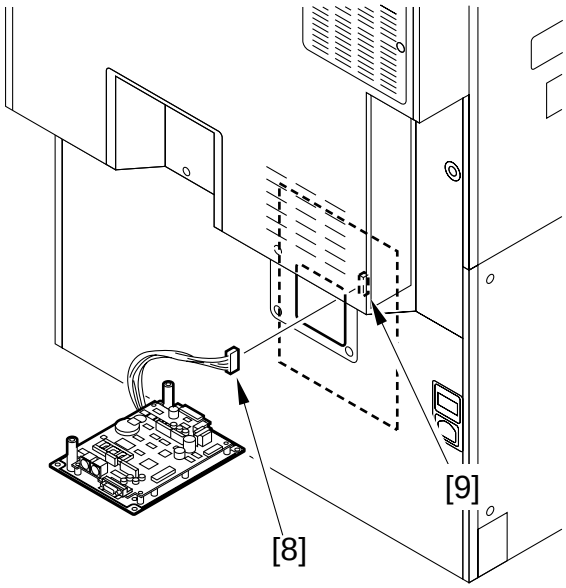


Figure 11-B603

4) If the Card Reader-A1 is to be installed, connect the relay cable (9P) for the card reader connected to J4 of the controller to the 9P connector (J520) of the copier's DC control.
5) Secure the controller to the copier's rear cover with four screws [10]. (Use the screws that come with the unit.)

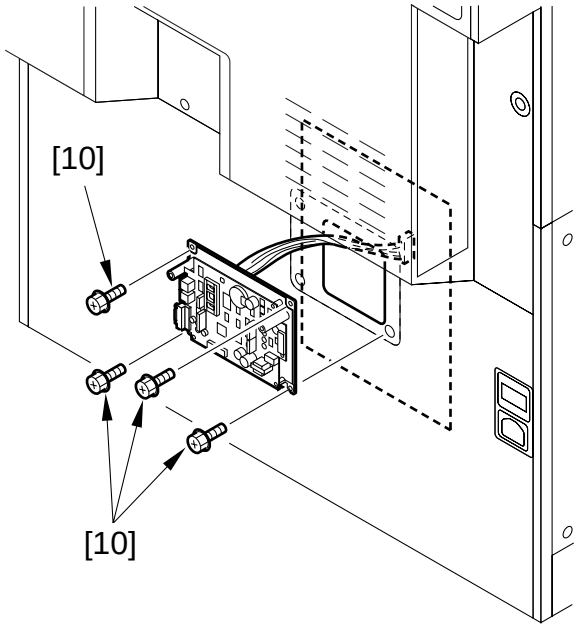


Figure 11-B604

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6) Remove the slack from the cable between the copier and the controller. Bundle the excess length of the cable, and secure it with the harness band [11].

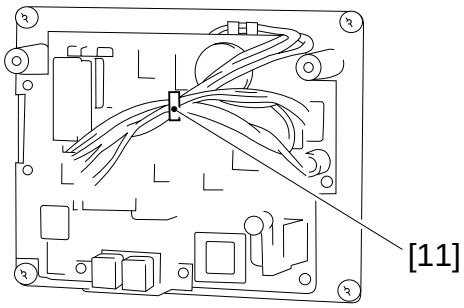


Figure 11-B605

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C. Checking the Operation

1) If the Communications Control Board-A1 or the Interface Board-B1 is not to be connected (not requiring the Power Supply-A1), go to step 4).
Connect the connector [1] of the power supply to the connector [2] of the controller securely as shown.
Check to make sure that the cord is in the groove of the board.

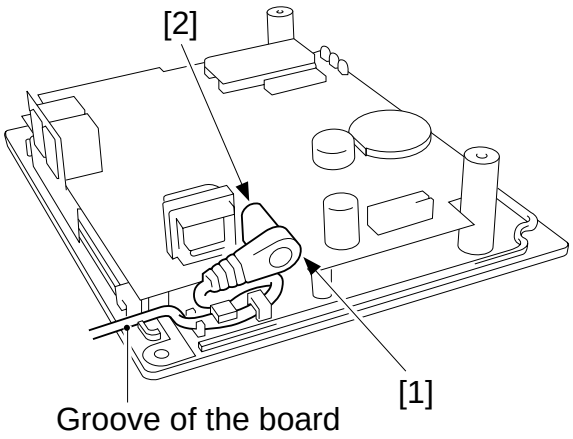


Figure 11-C601

2) Connect the power supply to the power plug, and check to make sure that LED1 of the controller turns on.

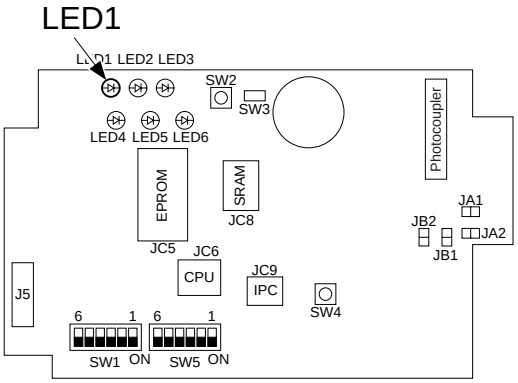


Figure 11-C602

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3) Turn on the copier's main switch, and check to make sure that LED2 of the controller flashes.
Make a copy, and check to make sure that LED3 flashes during copying operation.

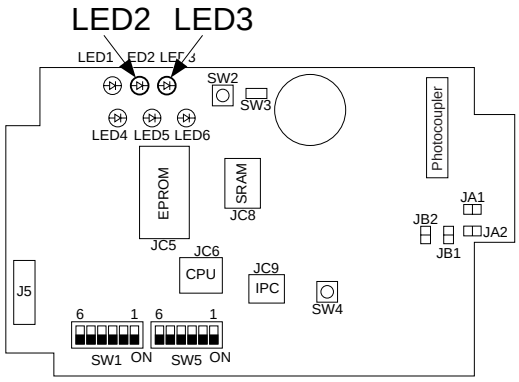


Figure 11-C603

4) If the Communications Board-A1 or the Interface Board-B1 is to be connected (requiring the Power Supply-A1), go to 5).
Turn on the copier's main switch, and check to make sure that LED1 of the controller turns on and LED2 turns off.
Make a copy, and check to make sure that LED3 flashes during copying operation.

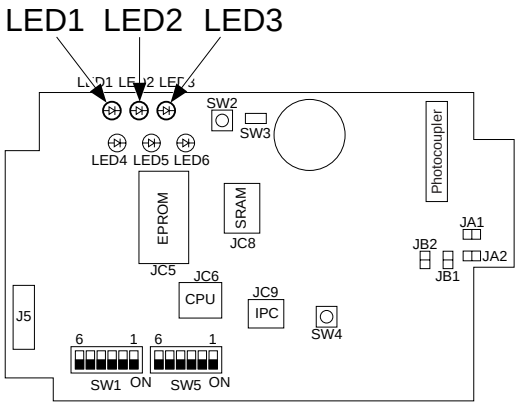


Figure 11-C604

5) If group control is not planned, go to step 11).
If group control is planned, set the input method, control mode, and paper size to suit the needs of the user.
Shift SW5-3 of the DIP switch of the controller to ON.

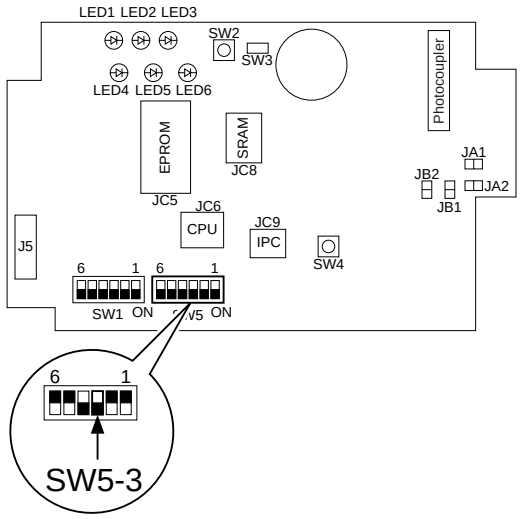


Figure 11-C605

6) Connect the connector [3] of the Numeric Keypad-A1 to the connector J3 [4] of the controller.

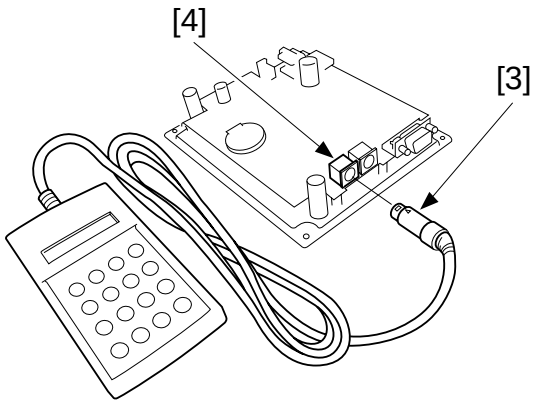


Figure 11-C606

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7) Press the switch (SW2) on the controller to start service mode.

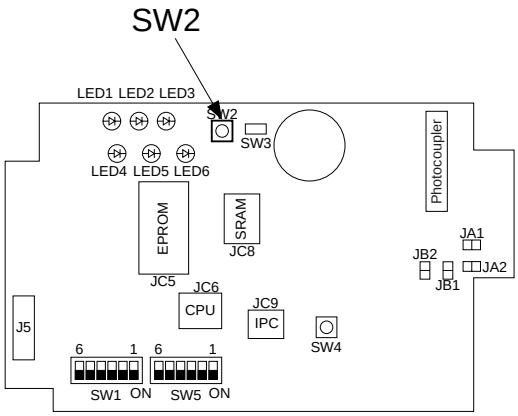


Figure 11-C607

8) Select the appropriate input method:

8.1) Input by keys on the Numeric Keypad-A1 for 'card' or 'ID' (initially, 'card').

8.2) To change from 'card' to 'ID,' perform the following using the keys on the keypad:
To change 'ID' to 'card,' on the other hand (requiring the Card Reader-A1), go to 8-4).
MANAGE-CARD is indicated.

8.3) Press the '2' key, and press the ENT key.
MANAGE-ID is indicated.

8.4) To change to card input,
When MANAGE-ID is indicated, press the '1' key, and then press the ENT key.
MANAGE-CARD will be indicated.

Code	Input method
1	Card
2	ID

Table 11-C601

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Caution:

1. If SW5-4 of the DIP switch on the controller is set to OFF, group control is disabled, and the following is indicated:



Figure 11-C608

2. If the copier's memory is used for ID input (using the copier on its own), the exiting ID Nos. may be used for the controller. Perform the following:

■ Drawing the ID Nos.

a) Set the DIP switch (SW1) of the controller as follows:

b) Press the switch SW4 on the controller.
In response, LED5 turns on momentarily.

c) Check LED5; it should turn on to indicate that the data has been drawn.
Otherwise, LED5 will flash. Press the switch SW4 once again, and see that LED5 turns on.
The copier cannot discharge paper while data is being drawn.

d) Set the DIP switch (SW1) on the control as follows (LED5 should turn off):

	bit	Position
SW1	1,2	ON
	3	OFF

Table 11-C602

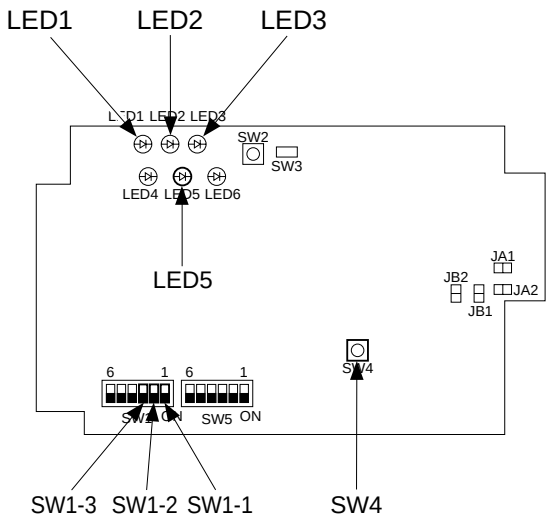


Figure 11-C609

	bit	Position
SW1	1, 2, 3	OFF

Table 11-C603

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9) Select the appropriate control mode as follows:

9.1) Select the appropriate control mode using the Numeric Keypad-A1.
Use Ⓥ/Ⓐ so that FORMAT=1 is indicated.

9.2) Select the appropriate control No. to suit the host copier and the needs of the user (initially, '1').

9.3) For example, to select '3',

1. FORMAT=1 is indicated. To change the initial setting '1' to '3',
   Press the '3' key.
   To clear the input, press the 'c' key for retry.
   To cancel, press the ESC key.
2. When FORMAT=3- is indicated, press the ESC key.
3. FORMAT=3- is indicated, and the cursor flashes for a while to indicate that formatting is taking place. When the cursor stops to flash, the control mode is set to '3'.

Caution:
When the control mode has been changed, the unit price, upper limit, counter reading, and ID Nos. are initialized, requiring input of the appropriate settings once again.

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10) Select the paper size for control as follows:

10.1) As needed, change the paper size for control using the DIP switch on the controller and the Numeric Keypad-A1. To use the existing size, go to step 11).

10.2) Use the Ⓥ/Ⓐ key to scan through the paper sizes. (Note that control paper size 5 'OTH' cannot be changed and, therefore, is not indicated).

EX 1:

1. SIZE 1=A3 is indicated.
2. Press the Ⓥ key.
3. SIZE 2=A4 is indicated.
4. Press the Ⓥ key.
5. SIZE 3=B4 is indicated.
6. Press the Ⓥ key.
7. SIZE 4=B5 is indicated.
8. Press the Ⓐ key.
9. SIZE 3=B4 is indicated.
10. Press the Ⓐ key.
11. SIZE 2=A4 is indicated.

EX 2:

1. Press the Ⓥ/Ⓐ key to indicate SIZE 3=B4
2. Find the size of LGL form the conversion code tables (Table 11-C604), and press '1' and '3'.
3. SIZE 3=13 is indicated.
4. Press the ENT key.
5. SIZE 3=LGL is indicated.

Caution:

1. For SIZE 1 through 4, the same paper size code cannot be used more than once.
2. The counter readings will not be cleared by changing the size.

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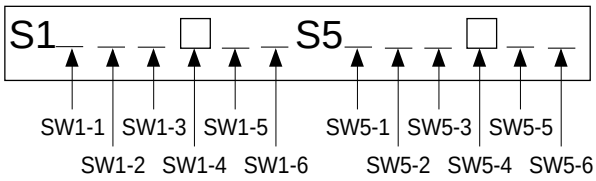
■ Conversion Code Table

Size	Code	Size	Code
B5	1	Postcard (Jpn)	25
FOOLS	2	U LARGE2	26
A4	3	GLTR	27
B4	5	10×8	28
A3	7	G LGL	29
U SMALL (US)	8	K LGL	33
STMT	9	OFFICIO	35
U LARGE (UL)	10	E OFFICIO	36
LTR	11	A OFFICIO	37
LGL	13	B OFFICIO	38
LDR (11×7)	15	A LT R	39
A5	17	A LGL	41
A FOOLS	18	12×18	48
A6	19	B3	49
FOLIO	21	A2	50
COMPUTER	23	17×22	51
U SMALL 2	24	18×24	52

Table 11-C604

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11) Check the DIP switch settings as follows:
11.1) Set SW5-3 (DIP switch) of the controller to OFF.
11.2) Using the Ⓥ/Ⓐ key, indicate the settings of the DIP switches (SW1, SW5) of the controller.



□ : bits are at ON.

__ : bits are at ON.

Figure 11-C610

11.3) Check the settings of the DIP switches (SW1, SW5) of the controller. (See Table 11-A601.)
If the settings are wrong, go back to "Setting the Board" to make the appropriate settings.
If you are setting the Interface Board-B1, Interface Board-A1, or Communications Control Board-A1 (accessories), see its respective Installation Procedure.
11.4) Press the switch (SW2).

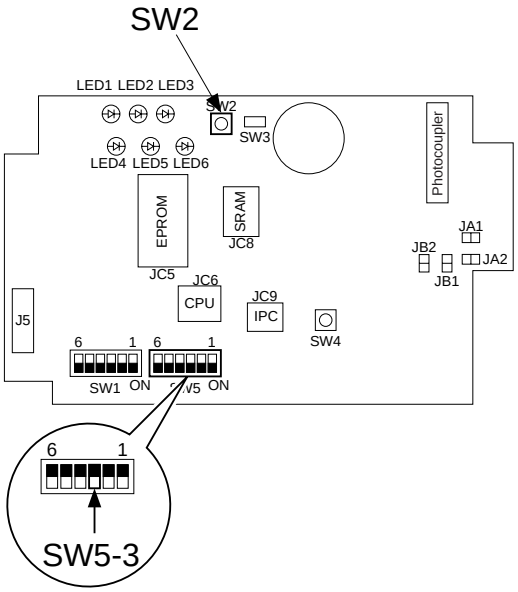


Figure 11-C611

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11.5) Check to make sure that the Numeric Keypad-A1 indicates the following; then, disconnect the keypad.



Figure 11-C612

12) Attach the switch settings label [6] to the cover [5] of the controller, and record the latest switch settings on the label.

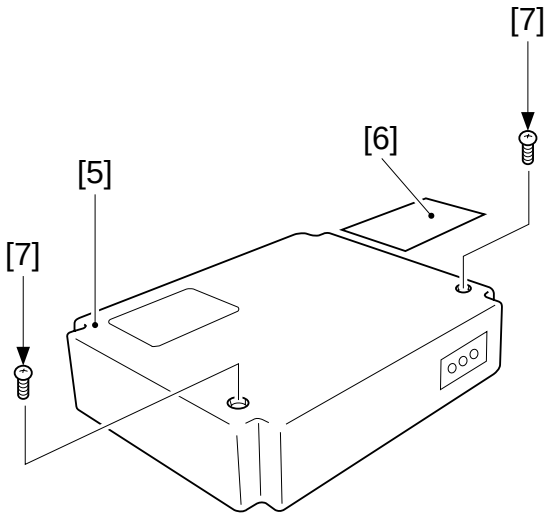


Figure 11-C613

13) Secure the cover of the controller with two screws [7]. When doing so, check to make sure that the cable of the power supply unit is fitted to the cable guide and is not trapped by the upper cover.
14) To Connect the Control Card Printer-A1, connect it to the connector J4 of the controller. (As necessary, use a relay cable.)

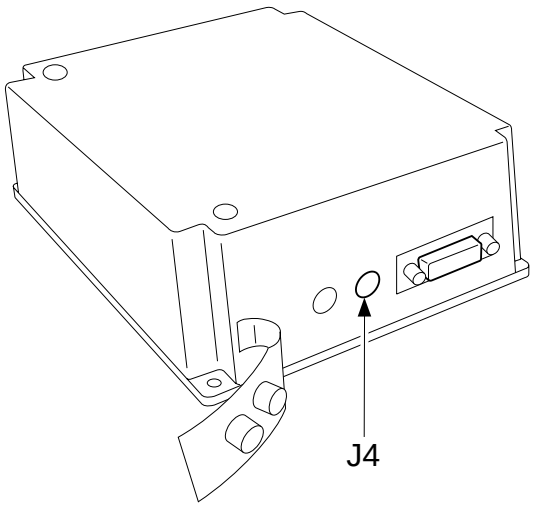


Figure 11-C614

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15) If the cable is all inside the controller, end the work by attaching the petty-pull [8] to the lower right of the copier's back.

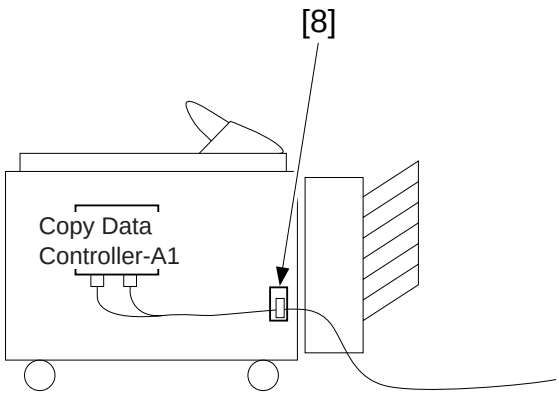


Figure 11-C615

16) Fit the cable used to connect the controller to the petty-pull.
17) Check to make sure that no cord is trapped by the copier or the sorter casters.

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VII . INSTALLING THE CASSETTE HEATER (for 120V model: Cassette Heater Unit 15)

A. Installing to the Copier

Necessary Parts
- Heater assembly
  1pc. FG2-9812-000 (for 220/240V model use)
- Heater cable guide
  1pc. FG2-9195-000
- Screw 2pc. XA9-0628-000
- Screw 1pc. XB6-7400-609

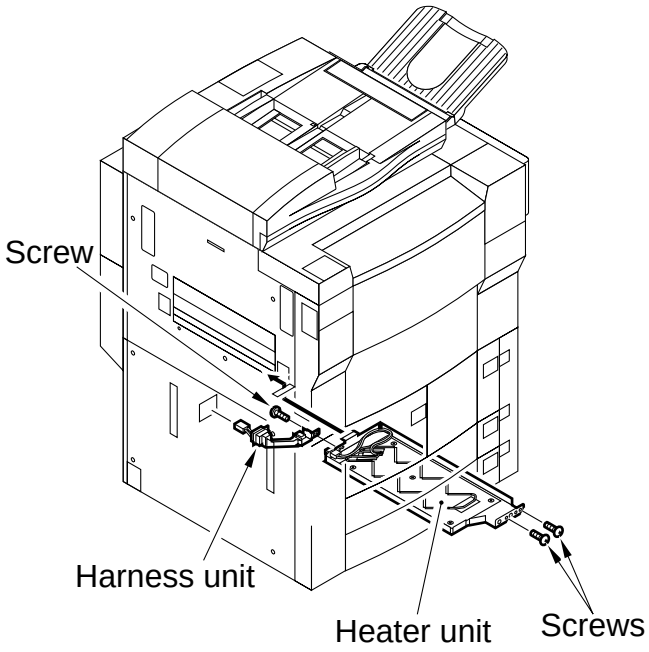


Figure 11-701

1) Turn off the copier, and disconnect its power plug.

2) Mount the heater cable guide to the heater with a screw, and connect the connector.

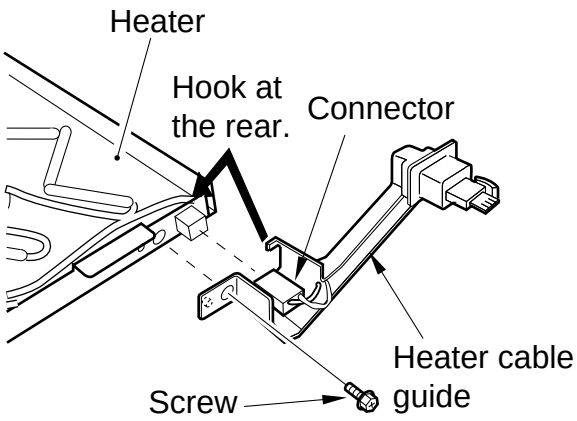


Figure 11-702

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3) Remove the copier's rear cover.
4) Disconnect the connector of the DC controller PCB, and free it from the wire saddle.
   Remove the three fixing screws, and detach the DC controller PCB.

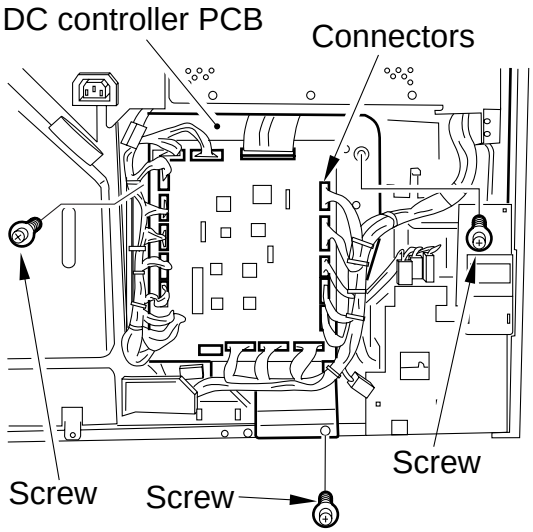


Figure 11-703

5) Press releasing button of the front deck (R), and slide out it.
   Detach the stoppers from both ends, and take out the deck (R).
   Take out the front deck (L) in the same way.

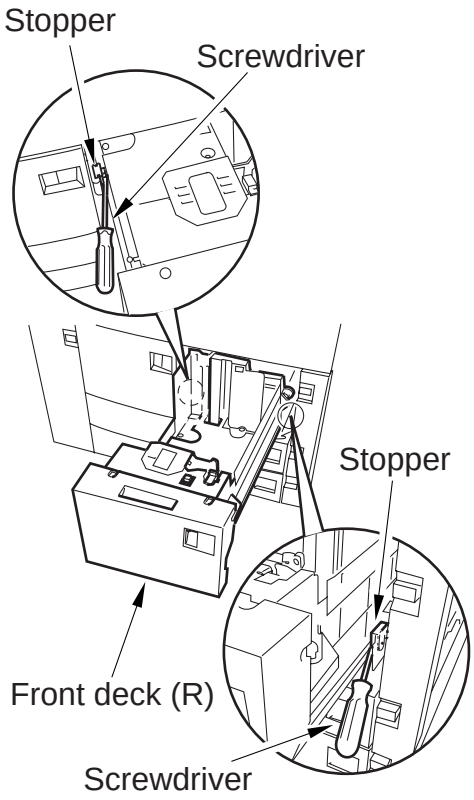


Figure 11-704

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6) Slide out the cassettes 3 and 4, and remove the inside cassettes.

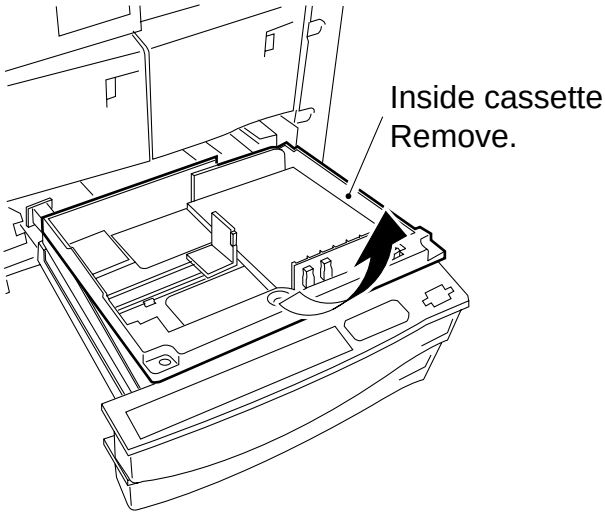


Figure 11-705

7) Insert the heater unit (to which the harness unit is secured) so that it will be under the holding plate found between the copier's cassettes 3 and 4.

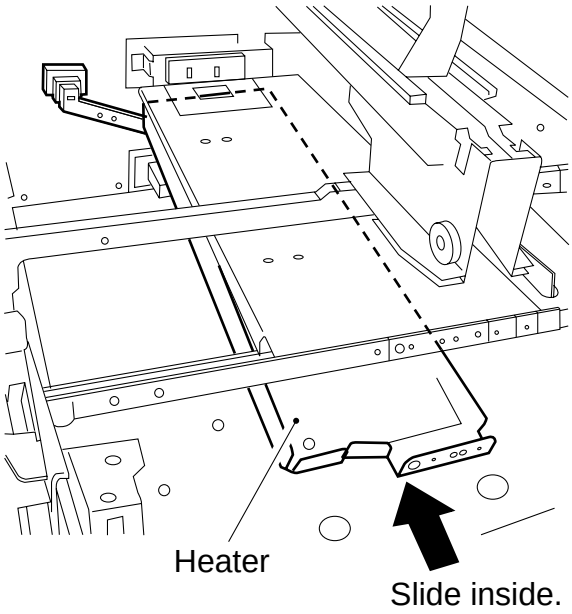


Figure 11-706

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Caution 1:
Check to make sure that the hook at the rear of the heater unit is in the groove.

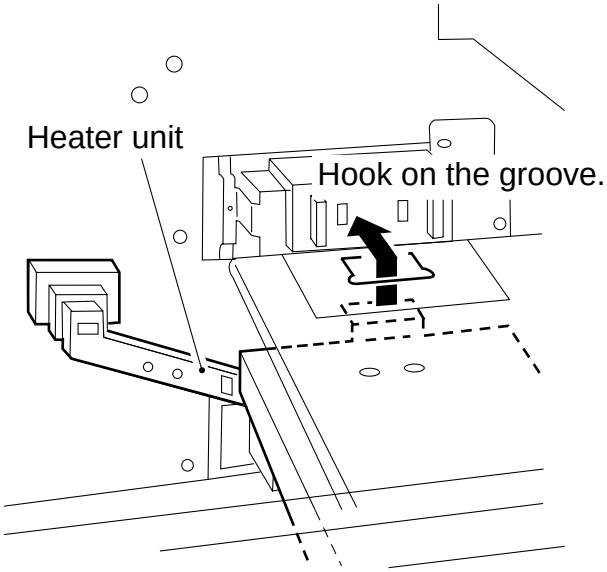


Figure 11-707

Caution 2:
Check to make sure that the connector at the tip of the heater cable guide is in the groove of the copier rear plate and, in addition, that the heater cable guide is securely in the groove.

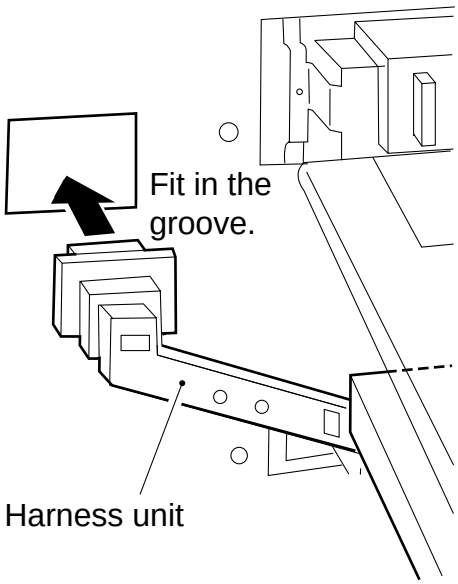


Figure 11-708

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8) Secure the heater unit in place with two screws.

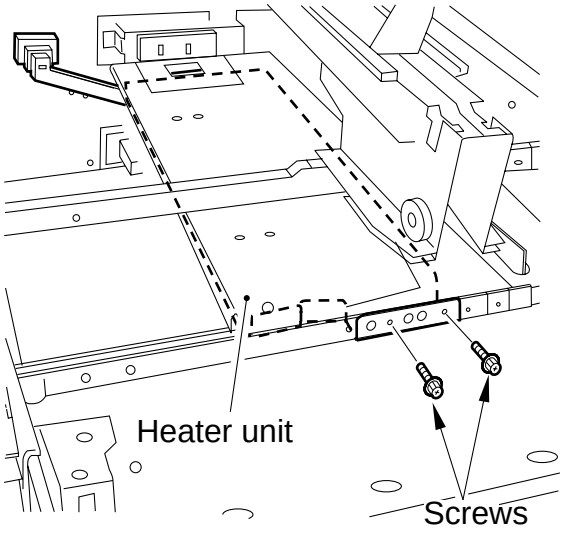


Figure 11-709

9) Connect the connector of the heater unit and the copier's connector.

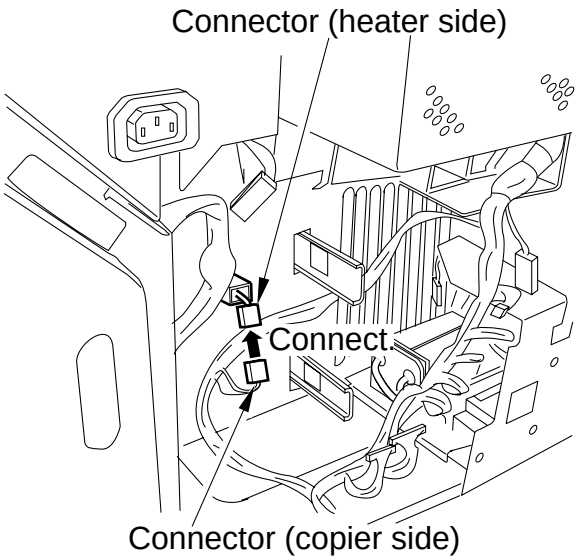


Figure 11-710

10) Mount the DC controller PCB and the rear cover.
11) Set all cassettes.
12) Connect the power plug, and turn on the power switch.

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CHAPTER 12

MAINTENANCE AND SERVICING

This chapter discusses those of the copier's parts that require inspection and maintenance.

I. PERIODICALLY REPLACED PARTS 12-1
II. DURABLES TABLE 12-2
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I . PERIODICALLY REPLACED PARTS

To maintain the performance of the machine at a specific level, you must replace the parts in Table 12-101 on a periodical basis. (Once they fail, they will appreciably affect the machine regardless of external change or damage.)

Schedule the replacement so that it will coincide with a periodical visit.

As of December 1998

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Primary, pre-transfer, separation charging wire	FY3-0030-000	AR	250,000	
2	Primary grid wire	FY1-0883-000	AR	500,000	
3	Thermistor	FY7-7463-000	1	500,000	
4	No. 2 thermistor	FH7-7464-000	1	500,000	
5	Thermal switch	FH7-6281-000	1	1,000,000	

Note: The above values are estimates only, and are subject to change based on future data.

Table 12-101

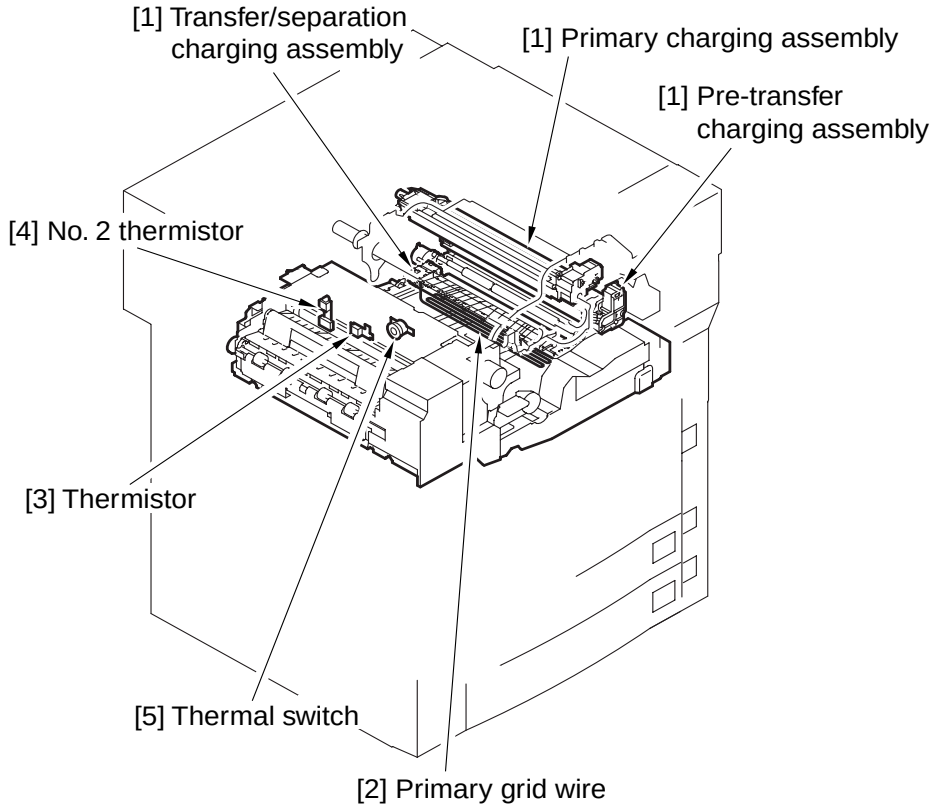


Figure 12-101

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II . DURABLES TABLE

Table 12-201 shows the parts that may require replacement because of deterioration or damage at least once over the period of machine warranty. Replace them when they have failed.

A. Copier

As of December 1998

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Scanning lamp	FH7-3347	1	200hr	
2	Developing cylinder	FB4-1819	1	1,000,000	
3	Developing assembly roll	FS5-6579	2	1,000,000	
4	Cleaner separation claw	FB4-8018	3	250,000	
5	Cleaning blade	FB4-1596	1	1,000,000	Use both edges; one for 500,000 copies. Apply toner after replacement.
6	Primary charging assembly	FG6-2015	1	1,000,000	
7	Transfer/separation charging assembly	FG6-2045	1	1,000,000	
8	Pre-transfer charging assembly	FG6-2016	1	1,000,000	
9	Primary charging wire cleaner 1	FF2-3552	2	250,000	
10	Primary charging wire cleaner 2	FF2-3551	2	250,000	
11	Transfer charging wire cleaner 1	FF5-6883	1	500,000	
12	Transfer charging wire cleaner 2	FF5-6884	1	500,000	
13	Separation charging wire cleaner	FF5-7891	1	250,000	
14	Pre-transfer charging wire cleaner	FF5-3090	1	500,000	
15	Pre-transfer charging assembly scraper	FF5-7934	1	500,000	
16	Upper fixing roller	FB2-7200	1	500,000	
17	Lower fixing roller	FB4-2220	1	500,000	
18	Fixing cleaning belt	FB4-7491	1	500,000	
19	Insulating bush (front, rear)	FB2-7239	2	500,000	Simultaneously with upper fixing roller.
20	Delivery upper separation claw	FC1-0391	6	500,000	

Table 12-201-1

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No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
21	Delivery lower separation claw	FA2-9037	2	1,000,000	
22	Pickup roller (deck, cassette)	FB4-2033	8	250,000	Actual copies made; may be checked in service mode. (Use 2 for each holder.)
23	Pickup/feeding roller (deck, cassette)	FB4-2034	8	250,000	Actual copies made; may be checked in service mode. (Use 2 for each holder.)
24	Separation roller (deck, cassette)	FB2-7777	4	250,000	Actual copies made; may be checked in service mode. (Use 2 for each holder.)
25	Pickup roller (manual feed tray)	FB4-2033	2	120,000	Actual copies made; may be checked in service mode.
26	Pickup/feeding roller (manual feed tray)	FB4-2035	2	120,000	Actual copies made; may be checked in service mode.
27	Separation roller (manual feed tray)	FB2-7545	1	120,000	Actual copies made; may be checked in service mode.
28	Decurling guide (Rear)	FF5-9544	1	500,000	
29	Decurling guide (Center)	FF5-9413	1	500,000	
30	Decurling guide (Front)	FF5-9543	1	500,000	

Table 12-201-2

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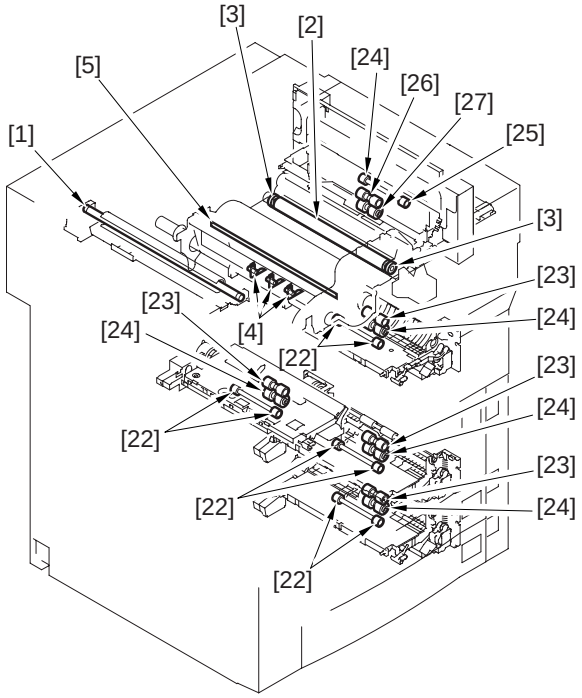


Figure 12-201a

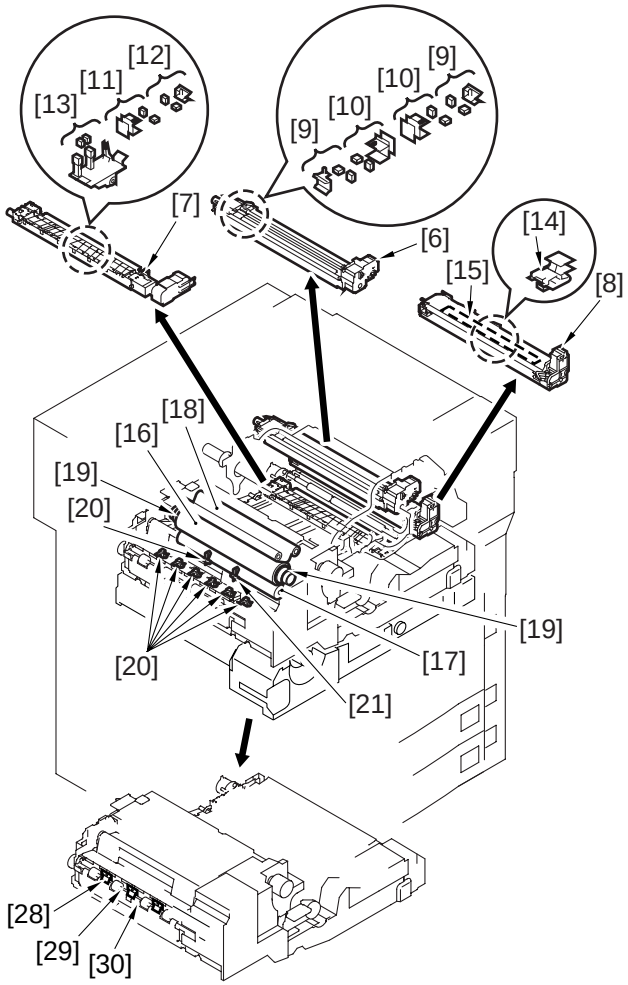


Figure 12-201b

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B. Side Paper Deck

As of November 1998

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Side paper deck pickup roller	FB4-2033-000	2	250,000	
2	Side paper deck feeding roller	FB4-2034-000	2	250,000	
3	Side paper deck separation roller	FB2-7777-020	1	250,000	

Table 12-202

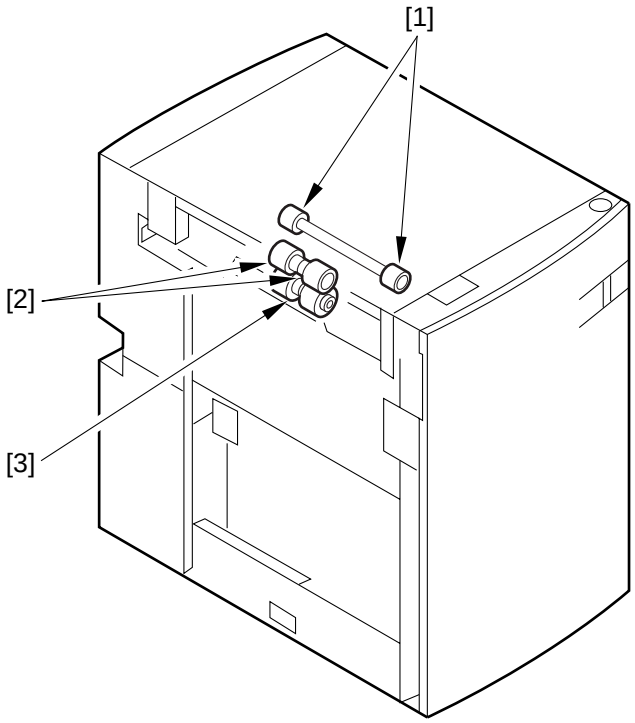


Figure 12-202

III . SCHEDULED SERVICING CHART

Caution:

1. As a rule, provide scheduled servicing every 250,000 copies.
2. Before setting out for a visit, check the Service Book, and take any parts expected to require replacement.
3. Clean each charging wire with alcohol; then, mount it back only after making sure that it has dried.

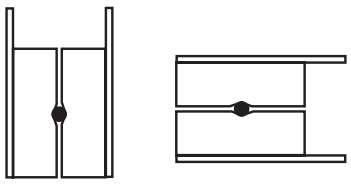
As of November 1998

No.	Work	Checks	Remarks
1	Report to the person in charge.	Check the general conditions.	
2	Record the counter reading.	Check the faulty copies.	
3	Make test copies.	Check the following: a. image density b. background for soiling c. characters for clarity d. leading edge margin e. fixing, registration, and back for dirt	Standards (single-sided copying) Leading edge: 4.0+1.5, -1.0mm Left/right: 2.5 ±1.5mm Trailing edge: 2.5±1.5mm
4	Clean the charging assemblies: • charging wire (primary, pre-transfer, transfer/separation) • grid wire (primary charging assembly) • shielding plate • roll electrode		Dry wipe with lint-free paper; then, clean with alcohol.

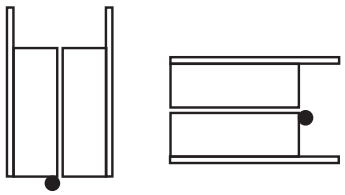
Points to Note When Cleaning/Replacing the Charging Wires and Replacing the Charging Wire Cleaner

Check to make sure that the charging wire is at the center of the cleaner at the end of the following work; otherwise, image faults may occur:

a. Cleaning the charging wire.
b. Replacing the charging wire.
c. Moving the charging cleaner by hand.
d. Replacing the charging wire cleaner.



Good example



Bad example

Table 12-301-1

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No.	Work	Checks	Remarks
5	Clean the optical path: • No. 1, 2, 3 mirrors • dust-proofing glass • original reflecting plate • standard white plate		Use a blower brush; if necessary, use alcohol.
6	Scanner system • scanner cable • scanner rail	Check the tension of the cable; adjust it as necessary. Clean the sliding area, and apply silicone oil (FY9-6011).	Check and adjust the scanner cable only after the first 250,000 copies.
7	Check the waste toner case.	If the waste toner case is half full or more, dispose of the waste toner in a plastic bag, or replace the waste toner case.	
8	Clean the filters: • ozone filter • dust-proofing filter		Remove the dust from the surfaces of the filters.
9	Developing assembly • developing assembly rolls	Clean the developing assembly rolls.	
10	Clean the pickup/feeding assembly: • transfer guide (upper/lower) plate • registration roller (upper/lower) • feeding belt • various feeding rollers		
11	Clean the fixing/delivery assembly: • separation claw (upper/lower) • various feeding rollers • inlet guide • cleaning belt (check) • inlet guide oil pan • thermistor • No. 2 thermistor • thermal switch		
12	Clean the cleaning assembly: • side scraper		
13	Clean the duplexing unit: • duplexing horizontal registration sensor		
14	Clean the copyboard glass.		
15	Make test copies.		
16	Make sample copies.		
17	Put the sample copies in order, and clean up the area around the machine.		
18	Record the latest counter reading.		
19	Fill out the Service Sheet, and report to the person in charge.		

Table 12-301-2

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IV . SCHEDULED SERVICING ITEMS

Caution:
Do not use solvents/oils other than those shown herein.

A. Copier

△: Clean ●: Replace ×: Oil □: Adjust ◎: Inspect

Unit	Part	Intervals					Remarks
		Instal-lation	every 250,000	every 500,000	every 750,000	every 1,000,000	
Externals/ controls	Copyboard glass		△				
	Ozone filter (FM2, FM8)		△				Remove the dust from the surface of the filter. See Figure 12-401.
	Dust-proofing filter (FM1, FM3, FM4; FM10, FM14)		△				Remove the dust from the surface of the filter. See Figure 12-401.
Scanner	Scanner cable		◎ □				Check/adjust for the first 250,000 copies.
	Scanner rail		△ ×				Apply silicone oil (FY9-6011).
Optical path	No. 1 through No. 3 mirrors		△				
	Dust-proofing glass		△				
	Reflecting plate		△				
	Standard white plate		△				
Charging assembly	Charging wire (primary, pre-transfer, transfer/separation)	△	●				
	Grid wire (primary)	△	△	●			
	Charging assembly shield plate (each assembly)	△	△				
	Roller electrode	△	△				

Table 12-401-1

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△: Clean ●: Replace ×: Oil □: Adjust ◎: Inspect

Unit	Part	Intervals					Remarks
		Instal-lation	every 250,000	every 500,000	every 750,000	every 1,000,000	
Photosensitive drum	Photosensitive drum			△			Use alcohol and drum cleaning powder (CK-0429); for steps, see B.2. "Work Steps."
	Slip ring electrode (for drum heater)					△×	Clean the following with alcohol; then, apply grease (FY9-6008): • electrode of the slip ring • protrusion of electrode • static brush
Developing assembly	Developing cylinder	◎					
	Developing assembly roll		△				
Cleaner	Toner replace the (rear/front)		△				For details of work, see item 1 of B.1."Work."
	Magnet roller			△			For details of work, see item 2 of B.2."Work."
Fixing assembly	Inlet guid		△				
	Cleaning belt	◎					Remove the slack at installation.
	Oil receptacle			△			
	Thermistor		△	●			
	No. 2 thermistor		△	●			
	Thermal switch					●	
Delivery assembly	Separation claw (upper/lower)		△				
Waste toner collecting mechanism	Waste toner case		◎				Check/remove.
Pickup/feeding assembly	Transfer guide		△				
	Registration roller (upper, lower)		△				
	Feeding belt		△				
	Various feeding rollers		△				
Duplexing assembly	Duplexing horizontal registration sensor		△				

Table 12-401-2

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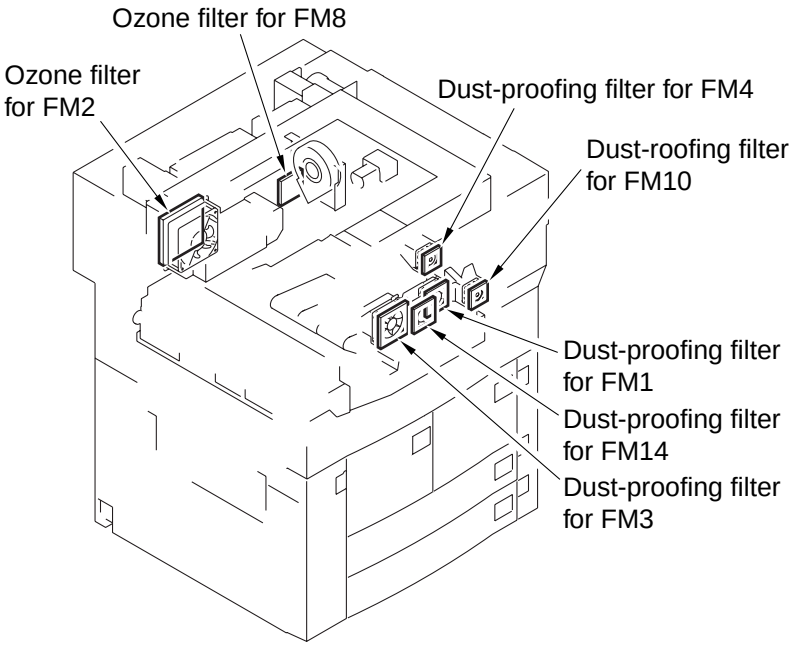


Figure 12-401

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B. Work Steps

Perform the following for the parts associated with the drum:

1. Work 1

a. Cleaning the toner pan

1) Slide out the fixing feeding unit from the copier.
2) Unlock the slide rails, and slide the fixing/feeding unit farther out.

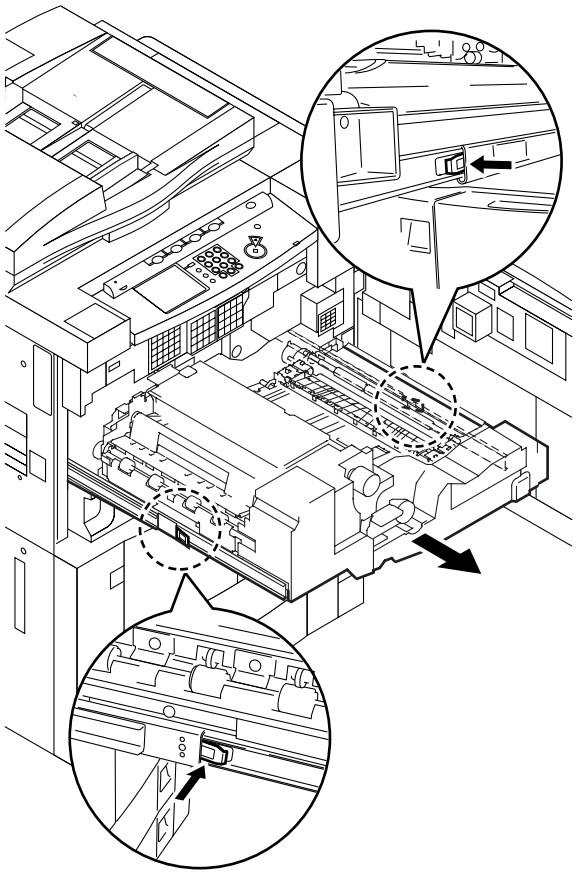


Figure 12-402

3) Remove the screw [3], and remove the toner pan (rear, front); then, remove the toner from the toner pan.

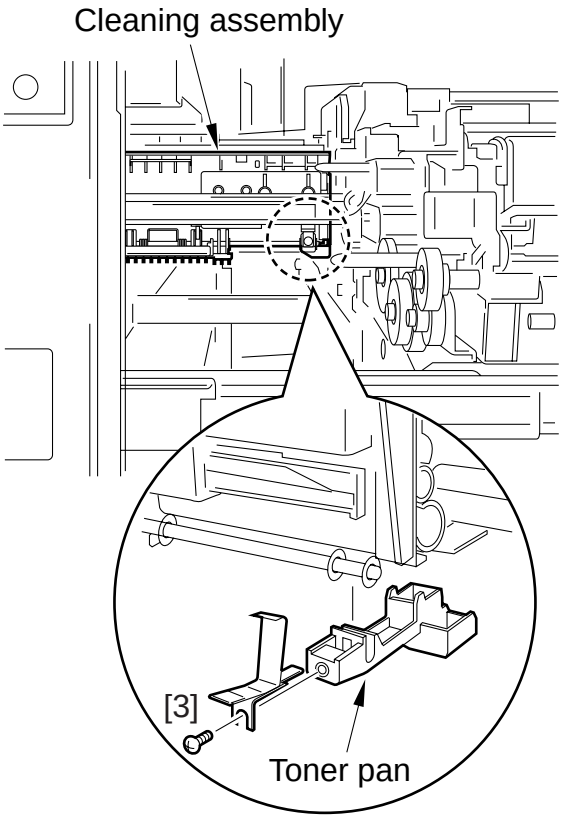


Figure 12-403

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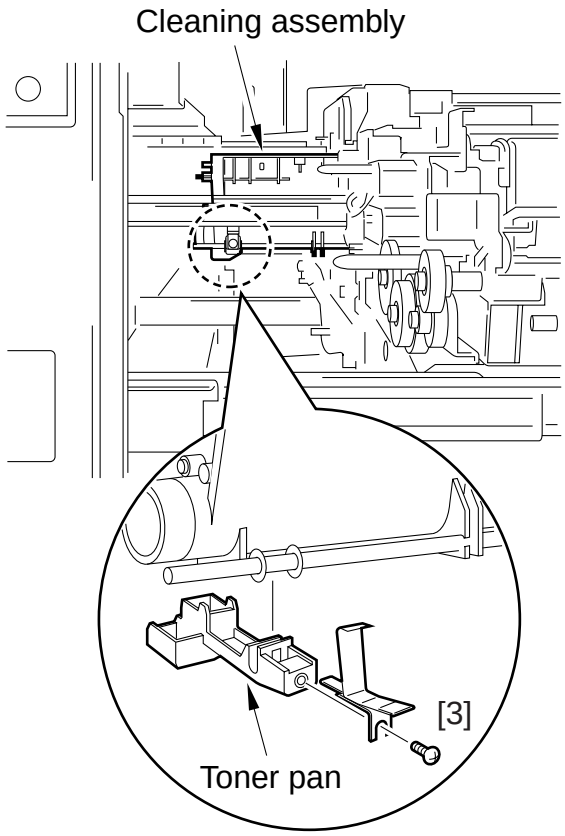


Figure 12-404

2. Work 2

a. Cleaning the photosensitive drum.

b. Removing the toner from the magnet roller assembly.

c. Reversing/replacing the cleaning blade.

Caution:
Do not rotate the magnet roll drive assembly during work. Otherwise, waste toner may fall through the cleaner assembly.

1) Slide out the process unit. (Be sure to place the drum protective sheet over the fixing/feeding unit.)
2) Take out the photosensitive drum.
3) Moisten lint-free paper [1] with 5 to 10 cc of alcohol [2]; then, pour 0.2 to 0.3 g of drum cleaning powder (CK-0429) [3] on the lint-free paper.

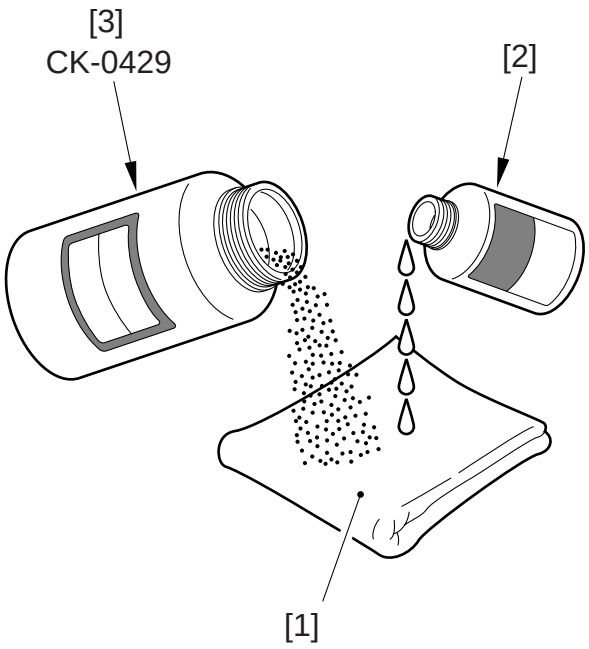


Figure 12-405

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4) While butting the lint-free paper relatively strongly against the photosensitive drum, wipe the surface of the drum from the front to the rear and from the rear to the front.

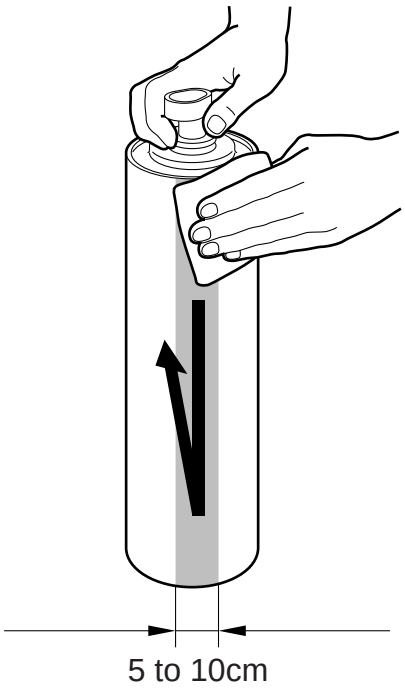


Figure 12-406

Caution:
- Keep the widths of cleaning to 5 to 10 cm in the peripheral direction of the drum.
- Move the lint-free paper back and forth 15 to 20 times over a single area. Forcing the lint-free paper will not affect the life of the drum.

5) When the alcohol has evaporated, dry wipe the surface with lint-free paper. If the area is uneven, go back to step 4), and increase the back-and-forth movements.
6) Rotate the drum for the width (5 to 10 cm), and repeat steps 3) through 5) until the entire area of the surface has been cleaned.
7) Remove the cleaning blade assembly.

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8) Insert a ruler [6] between the magnet roll [4] and the scraper [5], and move it from the front to the rear and then from the rear to the front to break any cake of toner.

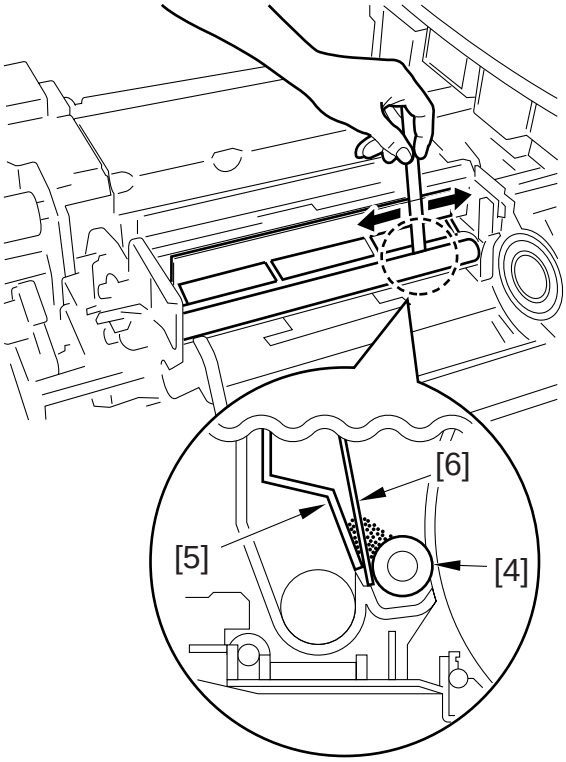


Figure 12-407

9) Remove the cleaning blade from the cleaning blade assembly.
10) Put the reversed or new cleaning blade [7] against the edge of the rear of the blade retaining plate [8].

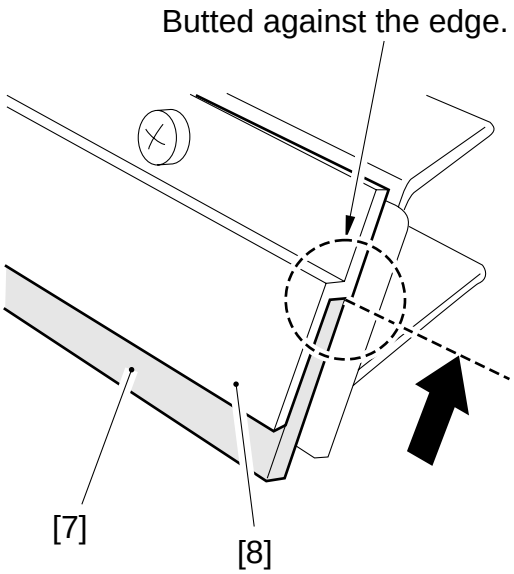


Figure 12-408

Caution:
When butting the cleaning blade, be sure to apply force to eliminate any gap.

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11) Tighten the screws on the blade retaining plate in the order indicated.

- Tighten temporarily for screws 1 through 5.

Caution 1:
While the blade is held in place with the plate, tighten the screws temporarily.

- Tighten fully for screws 6 trough 10.

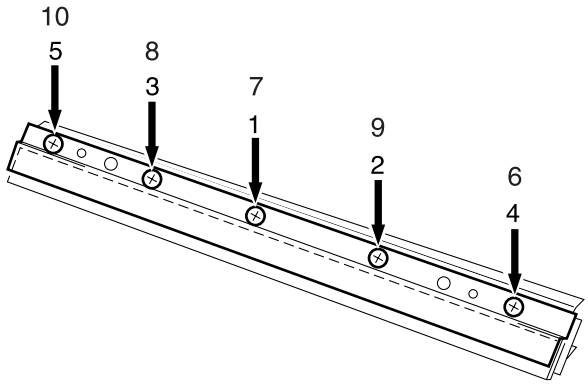


Figure 12-409

Caution 2:
When mounting the cleaning blade, be sure to put the blade auxiliary plate between the blade support plate and the blade back plate.

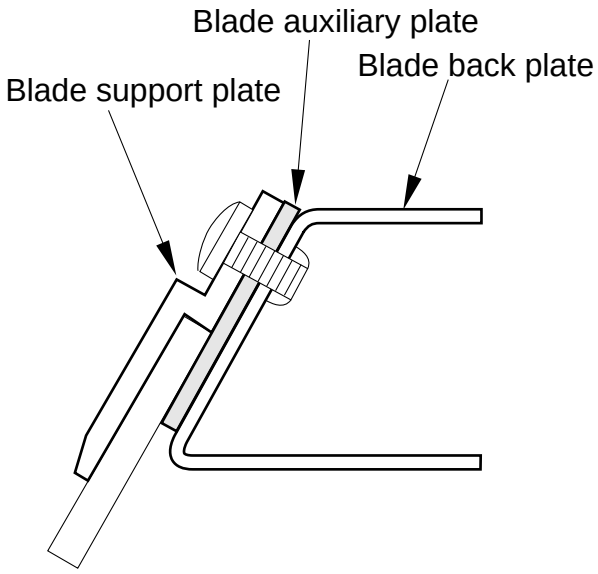


Figure 12-410

Caution 3:
After mounting the cleaning blade, rotate the drum; if toner slips through the blade, repeat the foregoing steps. If the fault is not corrected, replace the blade.

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CHAPTER 13

TROUBLESHOOTING

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I . GUIDE TO TROUBLESHOOTING TABLES

The troubleshooting tables used in this chapter are a modified (tabulated) version of generally used flow charts.

Study the following:

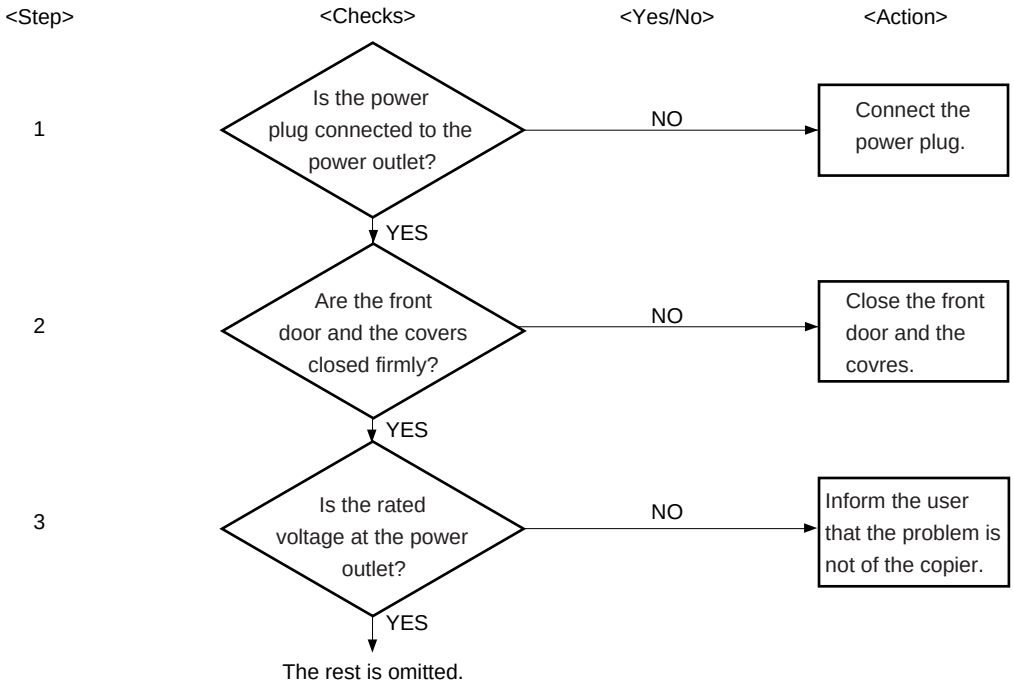
EX. AC power is absent.

Cause	Step	Checks	Yes/No	Action
Power plug	1	Is the power plug connected to the power outlet?	NO	Connect the power plug.
Covers	2	Is the front cover closed securely?	NO	Close the front cover.
Power supply	3	Is the rated voltage present at the power outlet?	NO	Inform the user that the problem is not of the copier.
	4	Is the rated voltage present between J1-1 and J1-2? (J1 is near the power cord mount.)	YES	Go to step 6.

The rest is omitted.

- If you want to find out possible causes (faulty part), see the column under "Cause."
  In the case of the above table, the power plug may be disconnected, the covers may not be closed firmly, the main power may be absent, and so forth.
- If you want to find out the checks or action to take, make checks according to the steps under "Checks" and perform the work under "Action."
  Answer the question under each check to make Yes or No, and take the appropriate action. Otherwise, go to the next step, and make the check under it.

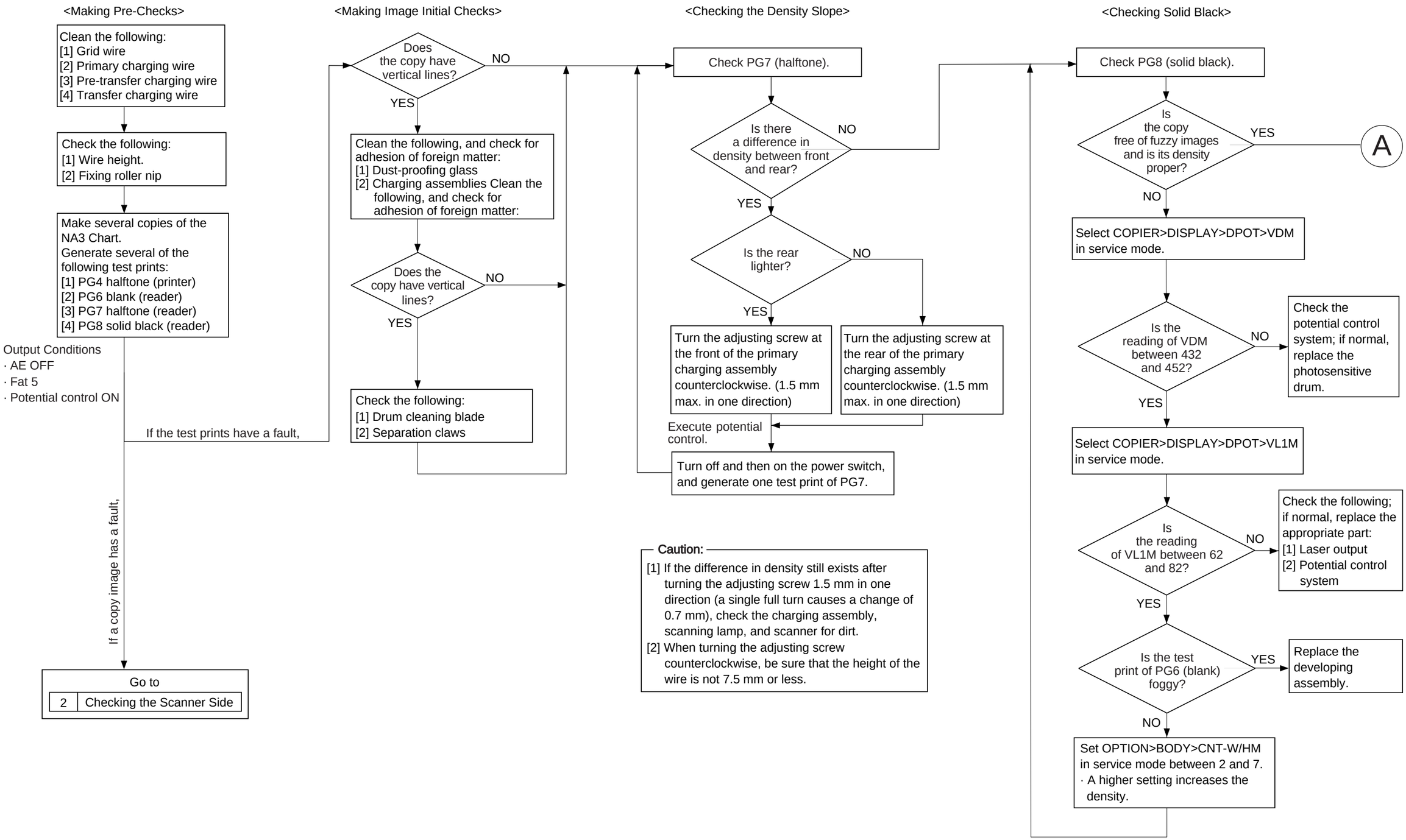
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■ You may come across such instructions as "Measure the voltage between J109-1 (+) and J109-2 (-) on the DC controller PCB" when you are asked to check voltage using a meter.
The instructions mean that you are to connect the + or - probe of the meter to its respective terminal; for example, for J109-1 (+) and J109-2 (-), connect the positive probe to J109-1 and the negative probe to J109-2.

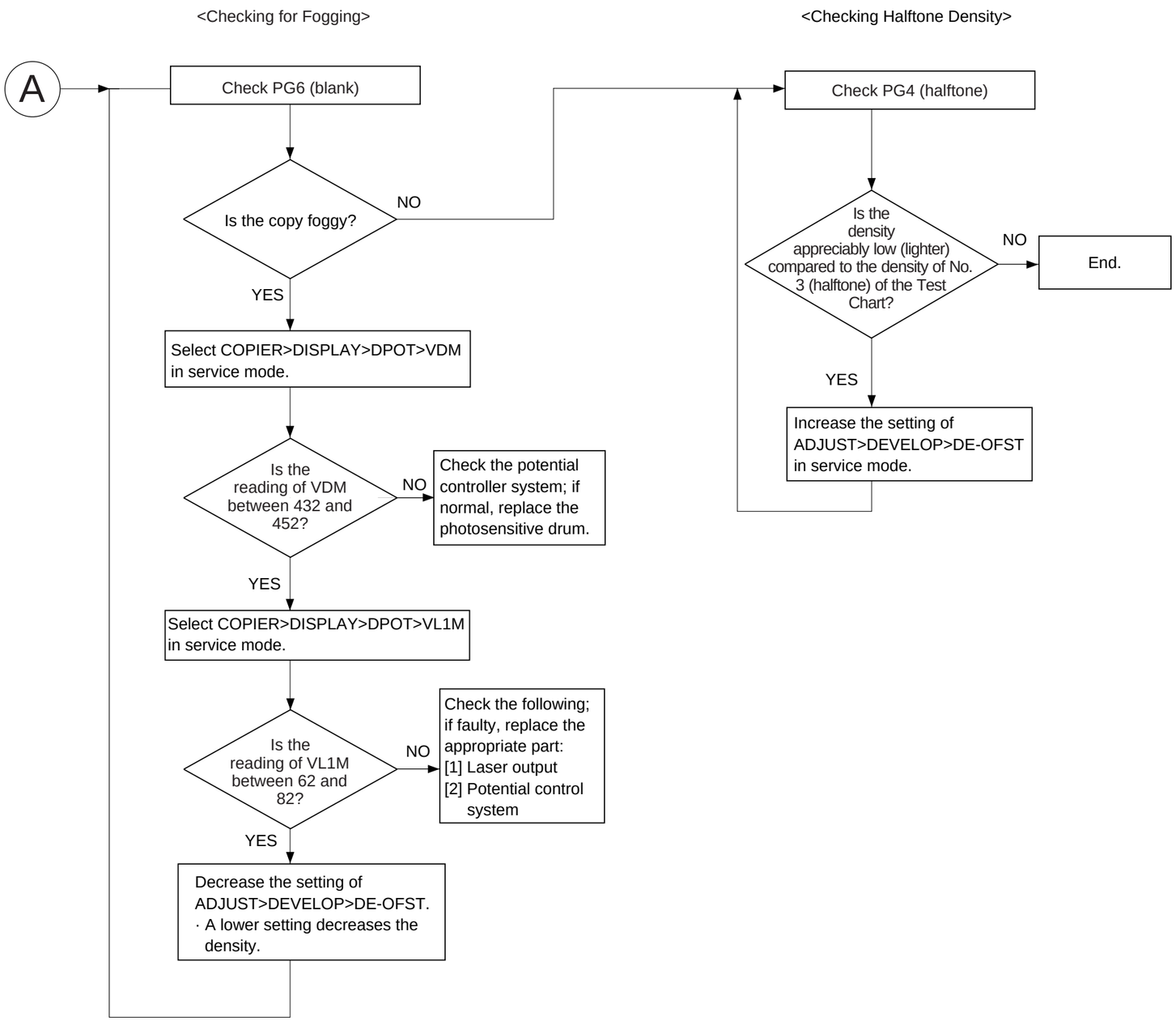
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1 Checking the Printer Side (1/2)


<Making Pre-Checks>
Clean the following:
[1] Grid wire
[2] Primary charging wire
[3] Pre-transfer charging wire
[4] Transfer charging wire
Check the following:
[1] Wire height.
[2] Fixing roller nip
Make several copies of the NA3 Chart.
Generate several of the following test prints:
[1] PG4 halftone (printer)
[2] PG6 blank (reader)
[3] PG7 halftone (reader)
[4] PG8 solid black (reader)
Output Conditions
· AE OFF
· Fat 5
· Potential control ON
If the test prints have a fault,
If a copy image has a fault,
Go to
2 Checking the Scanner Side
<Making Image Initial Checks>
Does the copy have vertical lines?
NO
YES
Clean the following, and check for adhesion of foreign matter:
[1] Dust-proofing glass
[2] Charging assemblies Clean the following, and check for adhesion of foreign matter:
Does the copy have vertical lines?
NO
YES
Check the following:
[1] Drum cleaning blade
[2] Separation claws
<Checking the Density Slope>
Check PG7 (halftone).
Is there a difference in density between front and rear?
NO
YES
Is the rear lighter?
NO
YES
Turn the adjusting screw at the front of the primary charging assembly counterclockwise. (1.5 mm max. in one direction)
Turn the adjusting screw at the rear of the primary charging assembly counterclockwise. (1.5 mm max. in one direction)
Execute potential control.
Turn off and then on the power switch, and generate one test print of PG7.
Caution:
[1] If the difference in density still exists after turning the adjusting screw 1.5 mm in one direction (a single full turn causes a change of 0.7 mm), check the charging assembly, scanning lamp, and scanner for dirt.
[2] When turning the adjusting screw counterclockwise, be sure that the height of the wire is not 7.5 mm or less.
<Checking Solid Black>
Check PG8 (solid black).
Is the copy free of fuzzy images and is its density proper?
YES
A
NO
Select COPIER>DISPLAY>DPOT>VDM in service mode.
Is the reading of VDM between 432 and 452?
NO
Check the potential control system; if normal, replace the photosensitive drum.
YES
Select COPIER>DISPLAY>DPOT>VL1M in service mode.
Is the reading of VL1M between 62 and 82?
NO
Check the following; if normal, replace the appropriate part:
[1] Laser output
[2] Potential control system
YES
Is the test print of PG6 (blank) foggy?
YES
Replace the developing assembly.
NO
Set OPTION>BODY>CNT-W/HM in service mode between 2 and 7.
· A higher setting increases the density.

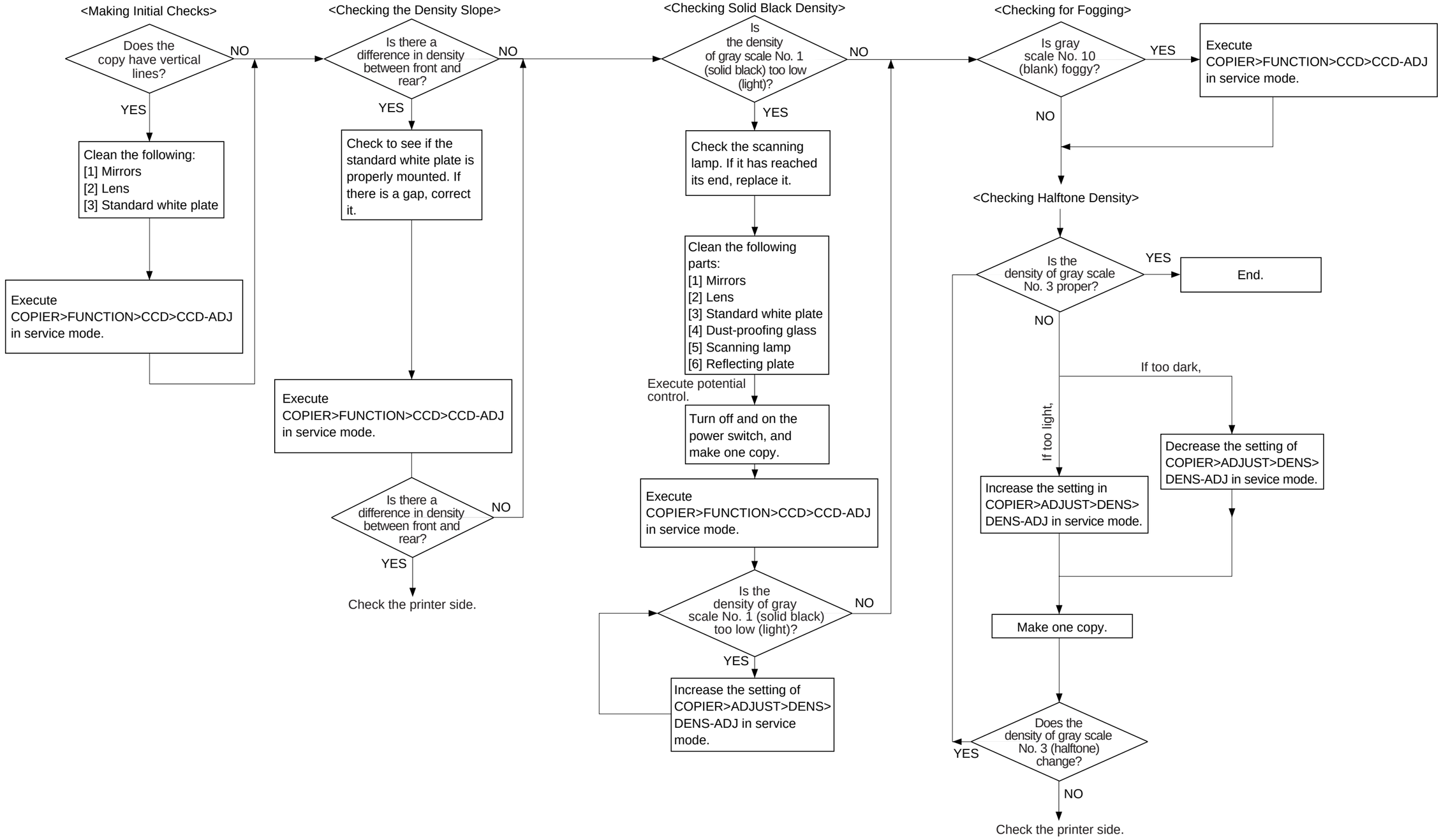
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1	Checking the Printer Side (2/2)


<Checking for Fogging>
<Checking Halftone Density>
A
Check PG6 (blank)
Is the copy foggy?
NO
YES
Select COPIER>DISPLAY>DPOT>VDM in service mode.
Is the reading of VDM between 432 and 452?
NO
Check the potential controller system; if normal, replace the photosensitive drum.
YES
Select COPIER>DISPLAY>DPOT>VL1M in service mode.
Is the reading of VL1M between 62 and 82?
NO
Check the following; if faulty, replace the appropriate part:
[1] Laser output
[2] Potential control system
YES
Decrease the setting of ADJUST>DEVELOP>DE-OFST.
· A lower setting decreases the density.
Check PG4 (halftone)
Is the density appreciably low (lighter) compared to the density of No. 3 (halftone) of the Test Chart?
NO
End.
YES
Increase the setting of ADJUST>DEVELOP>DE-OFST in service mode.

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<Making Initial Checks>
Does the copy have vertical lines?
NO
YES
Clean the following:
[1] Mirrors
[2] Lens
[3] Standard white plate
Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
<Checking the Density Slope>
Is there a difference in density between front and rear?
NO
YES
Check to see if the standard white plate is properly mounted. If there is a gap, correct it.
Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
Is there a difference in density between front and rear?
NO
YES
Check the printer side.
<Checking Solid Black Density>
Is the density of gray scale No. 1 (solid black) too low (light)?
NO
YES
Check the scanning lamp. If it has reached its end, replace it.
Clean the following parts:
[1] Mirrors
[2] Lens
[3] Standard white plate
[4] Dust-proofing glass
[5] Scanning lamp
[6] Reflecting plate
Execute potential control.
Turn off and on the power switch, and make one copy.
Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
Is the density of gray scale No. 1 (solid black) too low (light)?
NO
YES
Increase the setting of COPIER>ADJUST>DENS> DENS-ADJ in service mode.
<Checking for Fogging>
Is gray scale No. 10 (blank) foggy?
YES
Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
NO
<Checking Halftone Density>
Is the density of gray scale No. 3 proper?
YES
End.
NO
If too dark,
If too light,
Decrease the setting of COPIER>ADJUST>DENS> DENS-ADJ in sevice mode.
Increase the setting in COPIER>ADJUST>DENS> DENS-ADJ in service mode.
Make one copy.
Does the density of gray scale No. 3 (halftone) change?
YES
NO
Check the printer side.

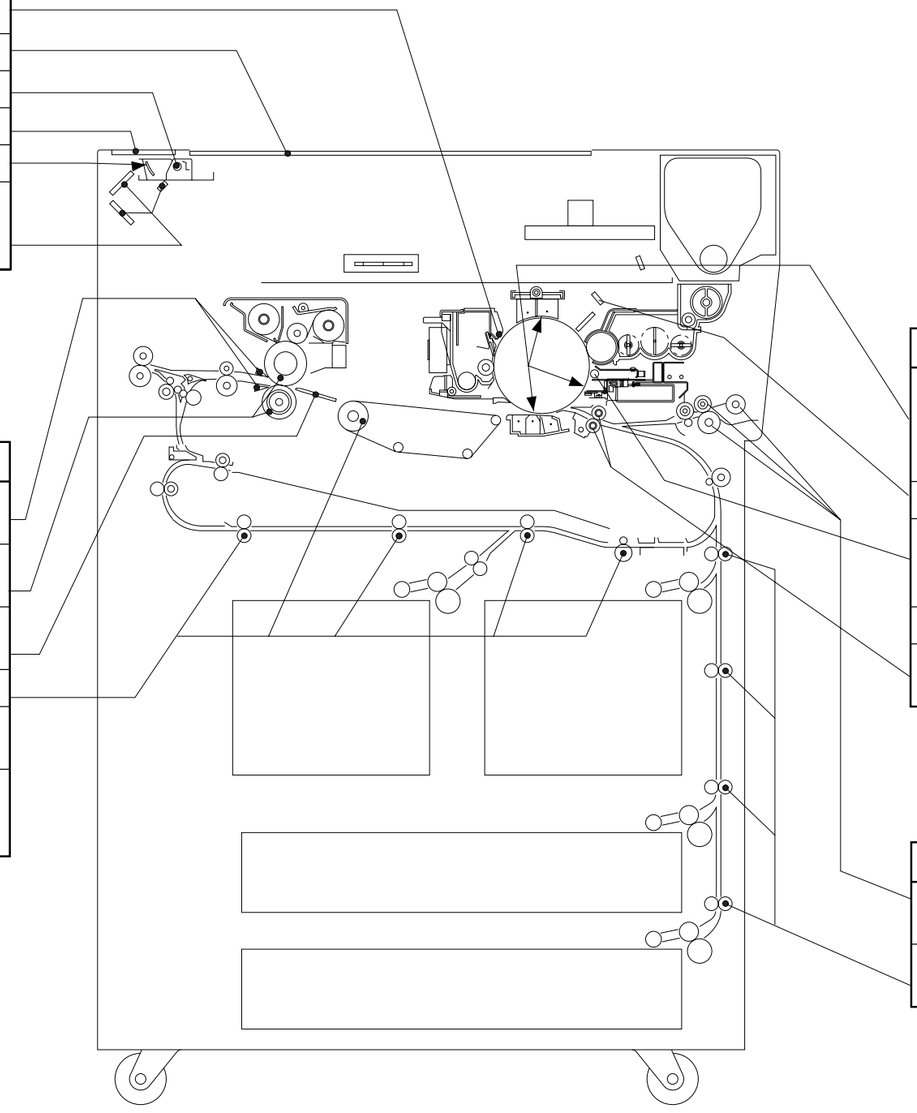
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B . Points to Note for Scheduled Servicing

Caution:

- Check to make sure that the block (front, rear) is free of melting, thermal deformation, cracking, or yellowing because of leakage. If noted, replace it with a new part.
- Check and clean as far as the inside of the block (front, rear).
- Do not use a cloth soiled with metal powder for cleaning.
- Do not use a moist cloth. Instead, dry wipe with lint-free paper, and then use alcohol; thereafter, make sure that alcohol has completely evaporated before mounting to the copier.
- Try to finish scheduled servicing and scheduled replacement within a specific period of time.

Part	Tool/solvent	Work
Pre-exposure lamp	Alcohol	Cleaning.
Copyboard glass	Alcohol	Cleaning.
Scanning lamp	Lint-free paper	Dry wiping.
Standard white plate	Lint-free paper	Dry wiping.
Reflecting plate	Blower brush	Cleaning.
No. 1 mirror through No. 3 mirror	Blower brush or lint-free paper	Cleaning by a blower brush; if dirt is excessive, cleaning with lint-free paper.



Part	Tool/solvent	Work
Primary charging assembly, transfer/separation assembly, pre-transfer assembly	Alcohol and lint-free paper	Dry wiping; then, cleaning with lint-free paper moistened with alcohol.
Dust-proofing glass	Lint-free paper	Cleaning
Dust-collecting roller		Disposing of toner collecting around the dust-collecting roller.
Developing assembly mount	Moist cloth*	Cleaning.
Registration roller	Alcohol and lint-free paper	Cleaning.

*Make sure no droplet of water remains.

Part	Tool/solvent	Work
Separation claw	Solvent and lint-free paper	Cleaning.
Upper roller, lower roller	Cleaning oil, lint-free paper	Cleaning.
Paper guide	Solvent and lint-free paper	Cleaning.
Feeding assembly	Moist cloth*	Cleaning.
Re-pickup assembly, reversing roller	Alcohol, lint-free paper	Cleaning.
Re-pickup assembly, pickup roller, registration roller	Alcohol and lint-free paper	Cleaning.

*Make sure no droplet of water remains.

Part	Tool/solvent	Work
Manual feed tray, pickup roller, feeding roller	Alcohol and lint-free paper	Cleaning.
Vertical path roller	Alcohol and lint-free paper	Cleaning.

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II . STANDARDS AND ADJUSTMENTS

A. Adjusting Images

1 Adjusting the Image Position

Make 10 prints from each of the following sources of paper to see if the image margin and the non-image width are as indicated:

- Cassette (each)
- Front deck (left, right)
- Manual feed tray
- Duplexing feeding unit
- Side paper deck

The image margin and the non-image width must be as follows on prints made in Direct:

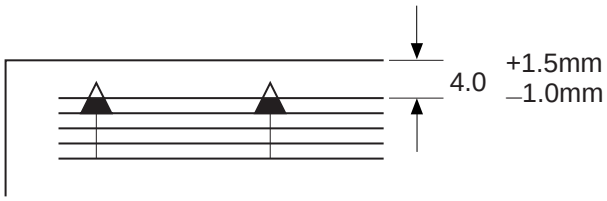


Figure 13-A201 Image Leading Edge Margin

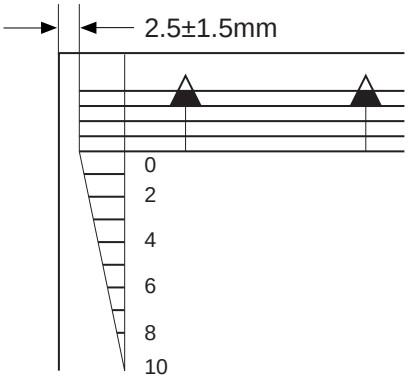


Figure 13-A202 Left/Right Image Margin

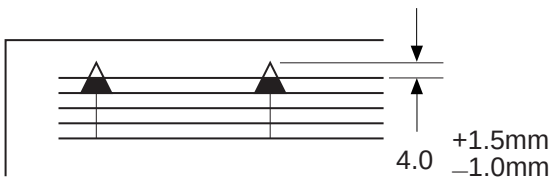


Figure 13-A203 Image Leading Edge Non-Image Width

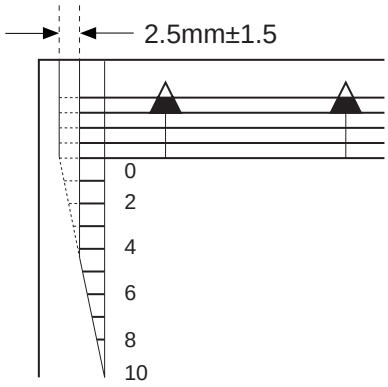


Figure 13-A204 Left/Right Non-Image Width

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If not as indicated, adjust the image position in the following order:
[1] Left/right image margin (registration adjustment)
[2] Image leading edge margin (registration adjustment)
[3] Left/right non-image width (CCD read start position)
[4] Image leading edge non-image width (scanner image leading edge position)

2 Adjusting the Left/Right Image Margin

a. Cassette 3/4

1) Remove the two screws [2], and detach the cassette front cover [1].

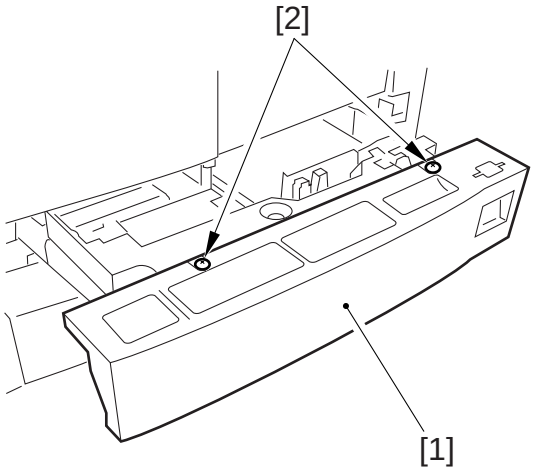


Figure 13-A205

2) Loosen the two fixing screws [3] on the left and right of the cassette; then, make adjustments using the adjusting screw [4].
3) After adjustment, be sure to execute COPIER>FUNCTION>CST>C3-STMTR/A4R or C4-STMTR/A4R in service mode.

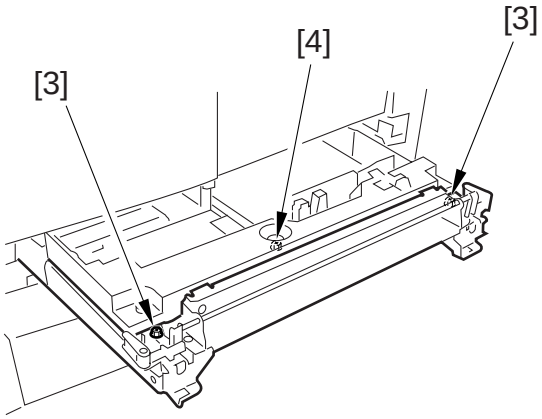


Figure 13-A206

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b. Front Deck (left/right)

1) Loosen the four screws [2] and the two fixing screws [3] on the cassette front cover [1].

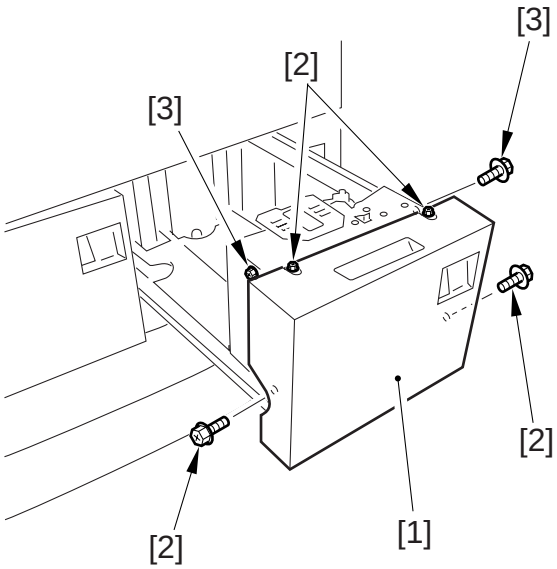


Figure 13-A207

2) Move the cassette guide assembly (front) [4] to the front or the rear to make adjustments.

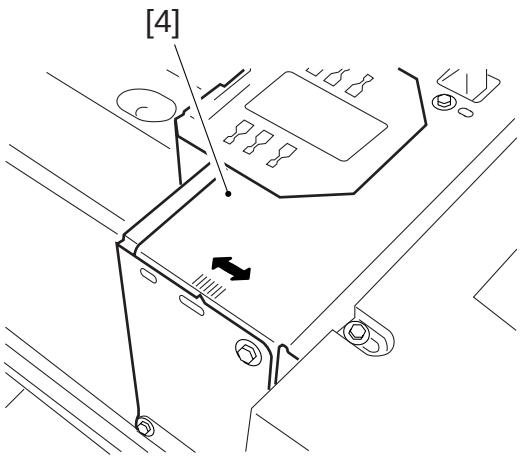


Figure 13-A208

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c. Manual Feed Tray

1) Loosen the two mounting screws on the manual tray, and adjust the position of the manual tray.

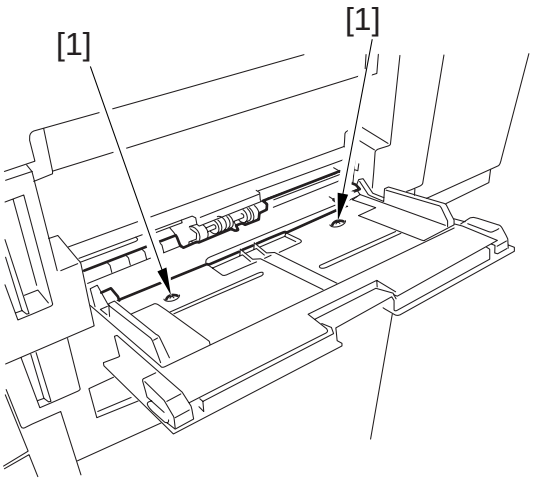


Figure 13-A209

d. Duplexing Feeding Unit (2nd side of double-sided print)

1) Correct the image margin as specified using service mode (COPIER>ADJUST>FEED-ADJ>ADJ-REFE).

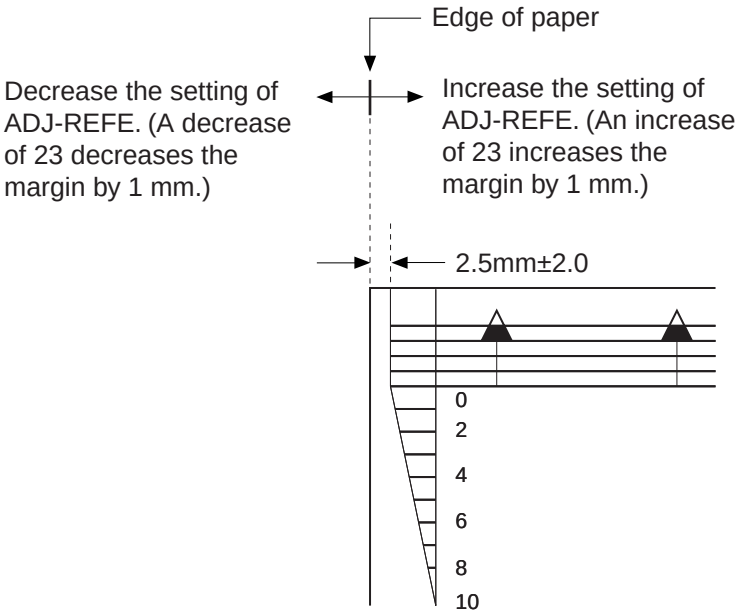

Edge of paper
Decrease the setting of ADJ-REFE. (A decrease of 23 decreases the margin by 1 mm.)
Increase the setting of ADJ-REFE. (An increase of 23 increases the margin by 1 mm.)
2.5mm±2.0
0
2
4
6
8
10

Figure 13-A210

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e. Side Paper Deck

1) Slide out the compartment, and adjust the position of the latch plate of the deck open solenoid using the two screws. (At this time, use the scale graduations on the latch plate as a guide.)

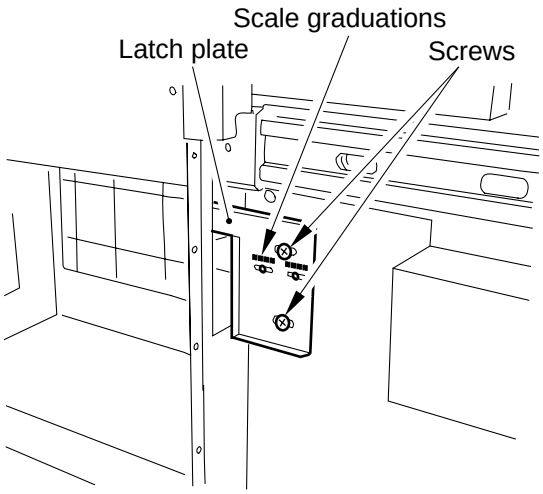


Figure 13-A211 Left Rear of the Compartment

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3 Adjusting the Image Leading Edge Margin

1) Set the image margin as specified in service mode (COPIER>ADJUST>FEED-ADJ>REGIST).

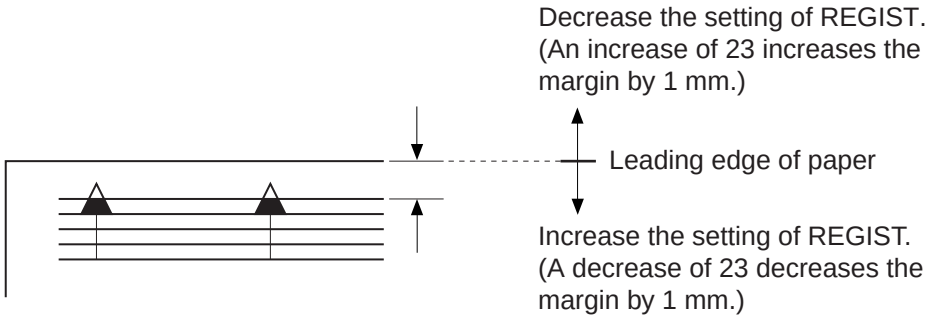

Decrease the setting of REGIST.
(An increase of 23 increases the margin by 1 mm.)
Leading edge of paper
Increase the setting of REGIST.
(A decrease of 23 decreases the margin by 1 mm.)

Figure 13-A212

4 Adjusting the Left/Right Non-Image Width

1) Correct the non-image width as specified in service mode (COPIER>ADJUST>ADJ-XY>ADJ-Y).

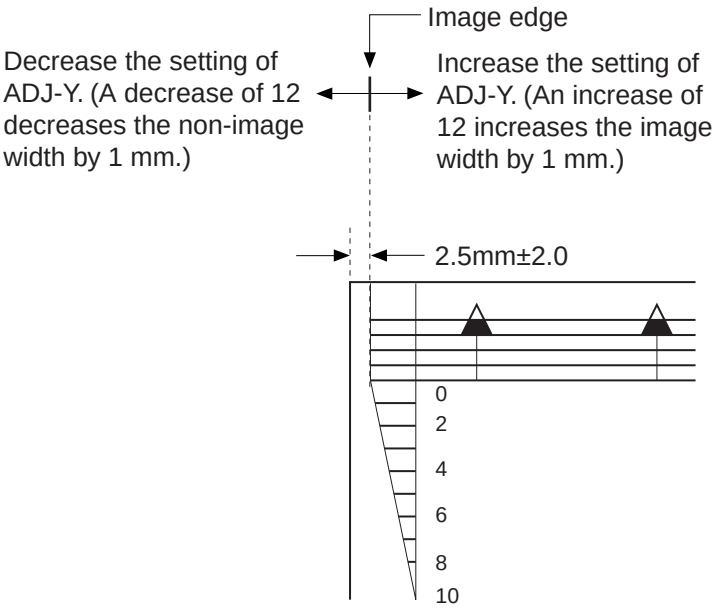

Image edge
Decrease the setting of ADJ-Y. (A decrease of 12 decreases the non-image width by 1 mm.)
Increase the setting of ADJ-Y. (An increase of 12 increases the image width by 1 mm.)
2.5mm±2.0
0
2
4
6
8
10

Figure 13-A213

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5 Adjusting the Image Leading

1) Correct the non-image width as specified in service mode (COPIER>ADJUST>ADJ-XY>ADJ-X).

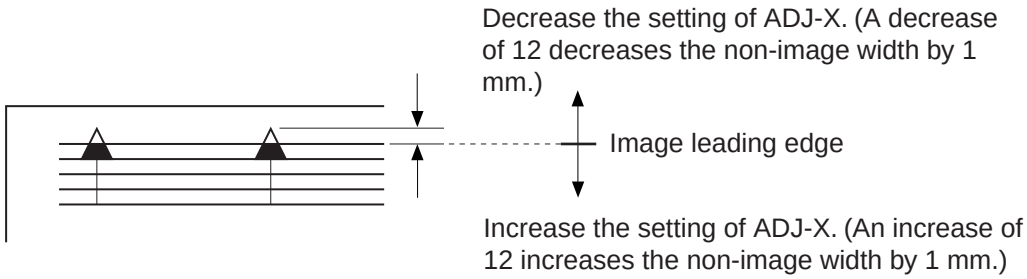

Decrease the setting of ADJ-X. (A decrease of 12 decreases the non-image width by 1 mm.)
Image leading edge
Increase the setting of ADJ-X. (An increase of 12 increases the non-image width by 1 mm.)

Figure 13-A214

B. Scanner System

1	Replacing the Scanner Drive Cable

See Chapter 3> V.B. "Scanner Drive System."

2	Adjusting the Scanner Mirror Mount

See Chapter 3> V.B. "Scanner Drive System."

3	After Replacing the Scanning Lamp

See Chapter 3> V.B. "Scanner Drive System."

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C. Image Formation System

1 Routing the Primary Charging Assembly Grid Wire

See Chapter 6> VII.C. "Charging Wires."

2 Routing the Charging Assembly Charging Wires

See Chapter 6> VII.C. "Charging Wires."

3 Mounting the Drum Cleaning Blade

See Chapter 6> VII.F. "Drum Cleaner Unit."

4. Mounting the Developing Blade

See Chapter 6> VII.E. "Developing Assembly."

5 Replacing the Potential Sensor/Potential Control PCB

1) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
2) Disconnect the power plug.

Caution:
The copier remains powered as long as the power plug is connected to the power outlet even after the main power switch is turned off. Be sure to disconnect the power plug.

3) Replace the potential sensor/potential control PCB.

Caution:
The potential sensor and the potential control PCB are adjusted as a pair. Be sure to replace both of them if either of them must be replaced.

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4) Fit the potential sensor tester electrode (FY9-3041) to the potential sensor.

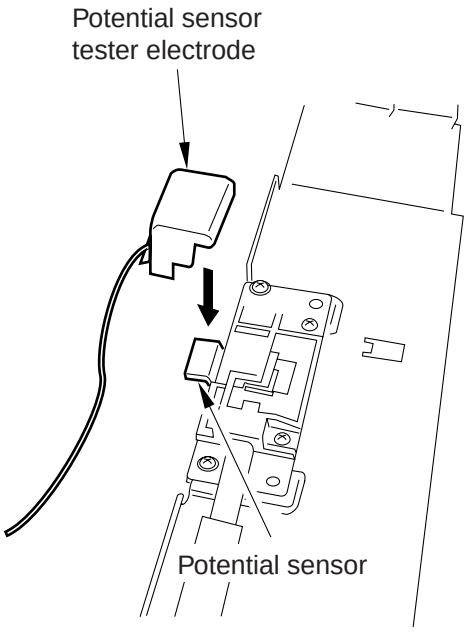


Figure 13-C201

Caution:
When fitting the tester electrode to the potential sensor, take care so that the magnet of the electrode will not come into contact with the potential sensor cover.

5) Connect the cable of the potential sensor tester electrode to the support metal plate (GND) of the potential measurement PCB.

Caution:
Be sure not to bring the clip into contact with the sensor cover by keeping it sufficiently away from the window of the sensor.

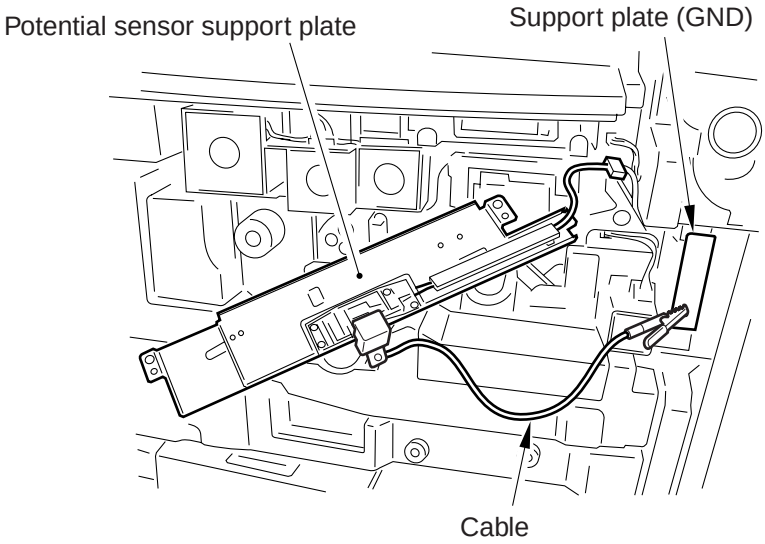


Figure 13-C202

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6) Insert the door switch actuator into the door switch assembly.
7) Connect the power plug to the power outlet, and turn on the main power switch and the control panel power switch.
8) Execute COPIER>FUNCTION>DPC>OFST in service mode.
9) Record the setting of OFST on the service label.
10) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
11) Disconnect the power plug from the power outlet.
12) Detach the potential sensor tester electrode.
13) Connect the power plug to the power outlet, and turn on the main power switch and the control panel power switch.

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D. Pickup/Feeding System

1 Orienting the Deck/Cassette Pickup Roller

Mount the deck/cassette pickup roller by reversing the steps used to remove it with the following in mind:

- The front and rear pickup rollers are not interchangeable.
- The front pickup roller is identified by its gold collar. When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] and the round marking [3] on the collar (gold) are toward the copier's front.

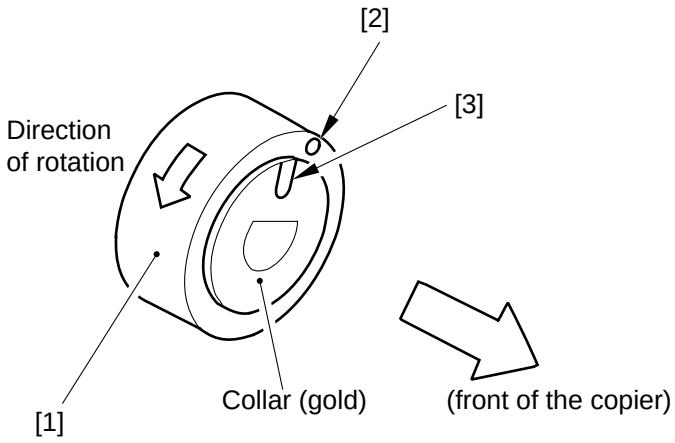


Figure 13-D201a

- The rear pickup roller is identified by its silver collar. When mounting the rear pickup roller [4] to the pickup assembly, be sure that the round marking [5] on the side of the roller is toward the copier's front while the round marking [6] on the collar (silver) is toward the copier's rear.

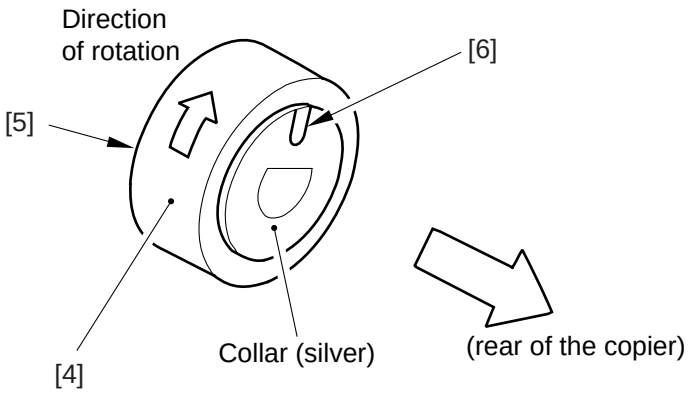


Figure 13-D201b

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2 Orienting the Deck/Cassette Separation Roller

When replacing the separation roller, be sure to orient it as follows:

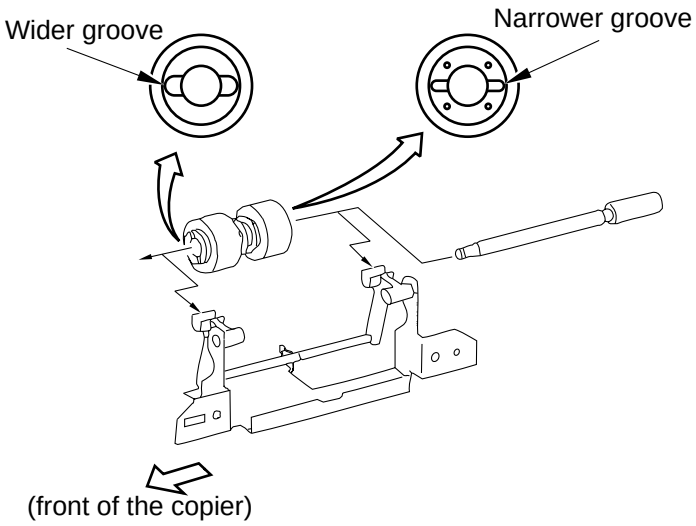


Figure 13-D202

3 Orienting the Deck/Cassette Pickup Assembly Feeding Roller

When mounting the deck/cassette pickup assembly feeding roller, be sure that the belt pulley [2] is toward the copier's front. When mounting the feeding roller [3] to the feeding roller shaft [4], be sure that the round marking [5] is toward the copier's front.

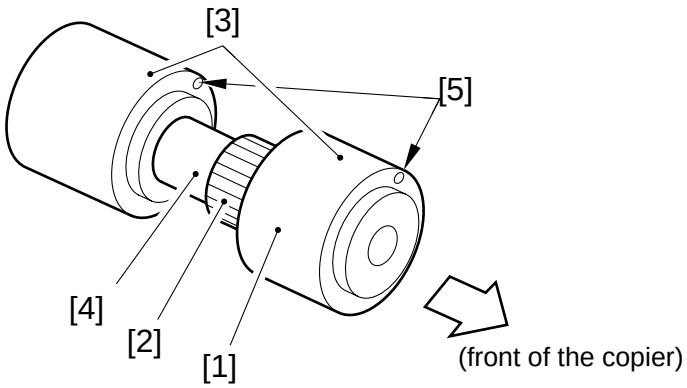


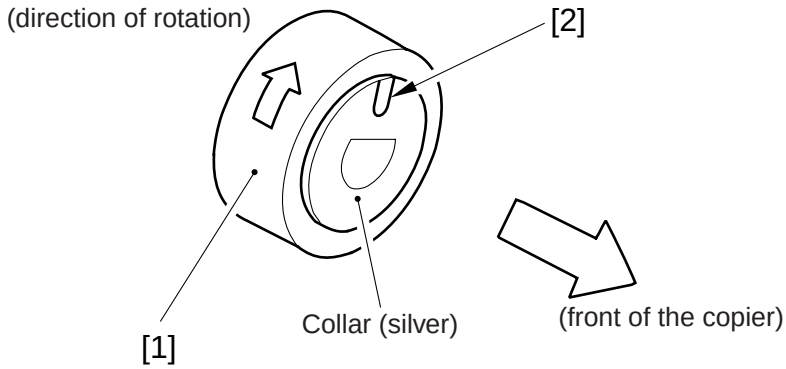
Figure 13-D203

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4 Orienting the Manual Feed Tray/Side Paper Deck Pickup Roller

Mount the manual feed tray/side paper deck pickup roller by reversing the steps used to remove it with the following in mind:

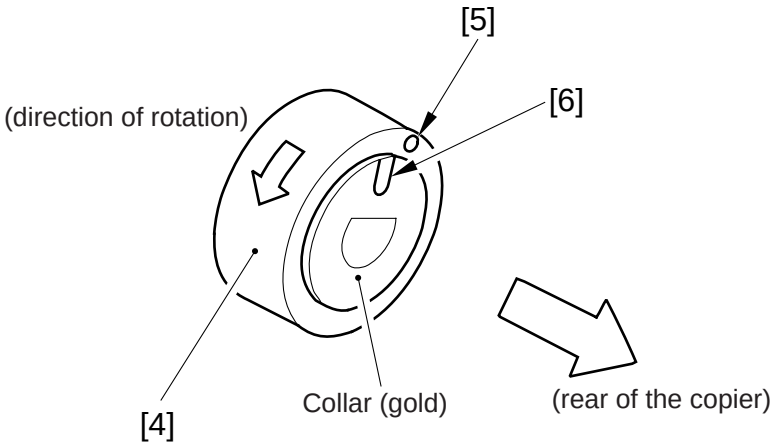
- The front and rear pickup rollers are not interchangeable.
- The front pickup roller is identified by its silver collar. When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] on the collar (silver) is toward the copier's front.



[1] Pickup roller
[2] Marking (collar)

Figure 13-D204a

- The rear pickup roller is identified by its gold collar. When mounting the pickup roller [4] to the pickup assembly, be sure that the round marking [5] on the side of the roller and the round marking [6] on the collar (gold) are toward the rear of the copier.



[4] Pickup roller
[5] Marking (roller)
[6] Marking (collar)

Figure 13-D204b

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5 Orienting the Manual Feed Pickup Roller

When routing the feeding roller assembly [1] to the manual feed tray pickup assembly, be sure that the belt pulley [2] is toward the copier's front. When mounting the feeding roller [3] to the feeding roll shaft [4], be sure that the round marking [5] is toward the copier's front.

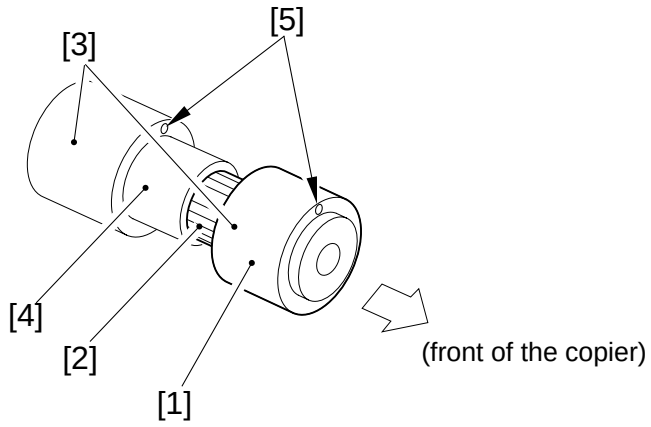


Figure 13-D205

6 Orienting the Side Paper Deck Feeding Roller

When mounting the feeding roller [1] to the side paper deck pickup assembly, be sure that the belt pulley [2] is toward the copier's front. When mounting the feeding roller [3] to the feeding roler shaft [4], be sure that the round marking [5] is toward the copier's rear.

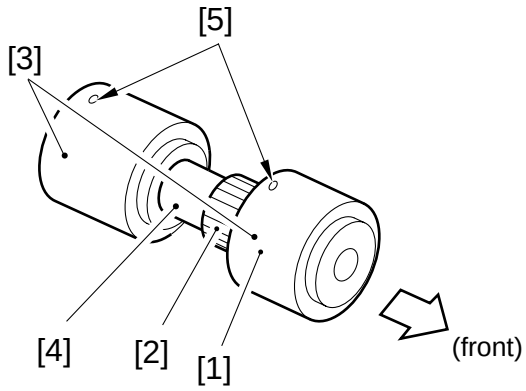


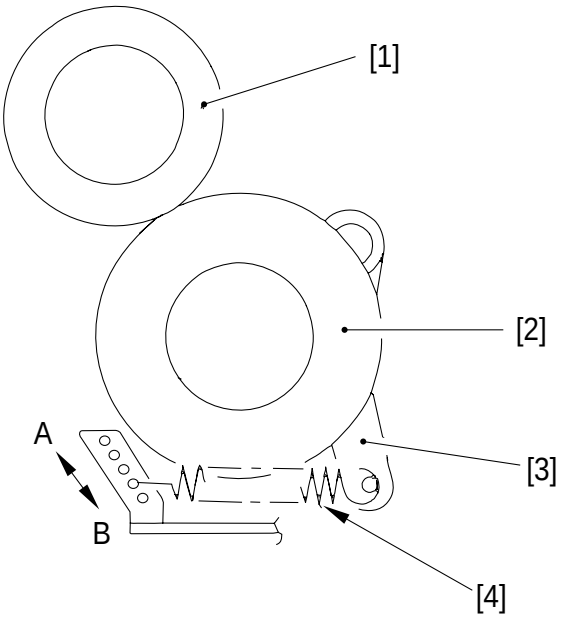
Figure 13-D206

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7 Adjusting the Pressure of the Deck/Cassette Separation Roller

If double feeding or pickup failure occurs during pickup operation, reposition the pressure spring of the separation roller.

- If double feeding occurs, move the spring into the direction of arrow B.
- If pickup failure occurs, move the spring in the direction of arrow A.



[1] Feeding roller [2] Separation roller
[3] Pressure lever [4] Pressure spring

Figure 13-D207

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8 Adjusting the Pressure of the Manual Tray Pickup/Feeding Roller

If double feeding or pickup failure occurs during pickup operation, reposition the pressure spring of the separation roller.

- If double feeding occurs, move the spring in the direction of arrow A.
- If pickup failure occurs, move the spring in the direction of arrow B.

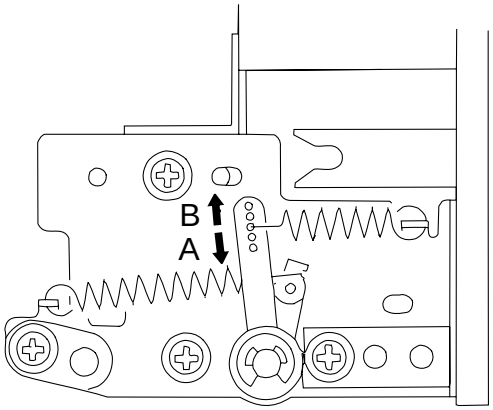


Figure 13-D208

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9 Mounting the Solenoids

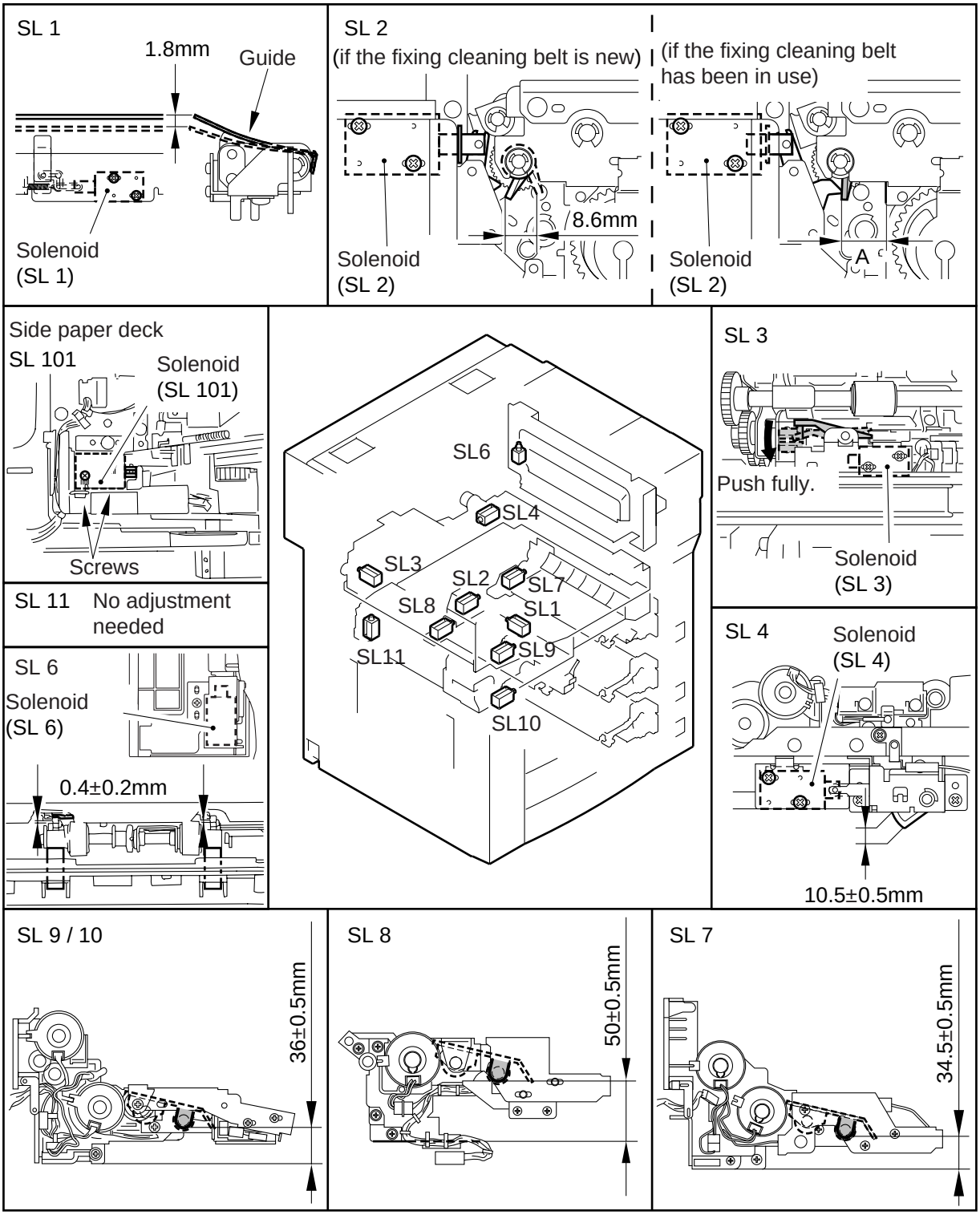


Figure 13-D209

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9.1 Position of the Fixing Inlet Guide Solenoid (SL1)

Adjust the position of the solenoid using the screw [1] so that the guide will lower 1.8 mm when the solenoid turns on.

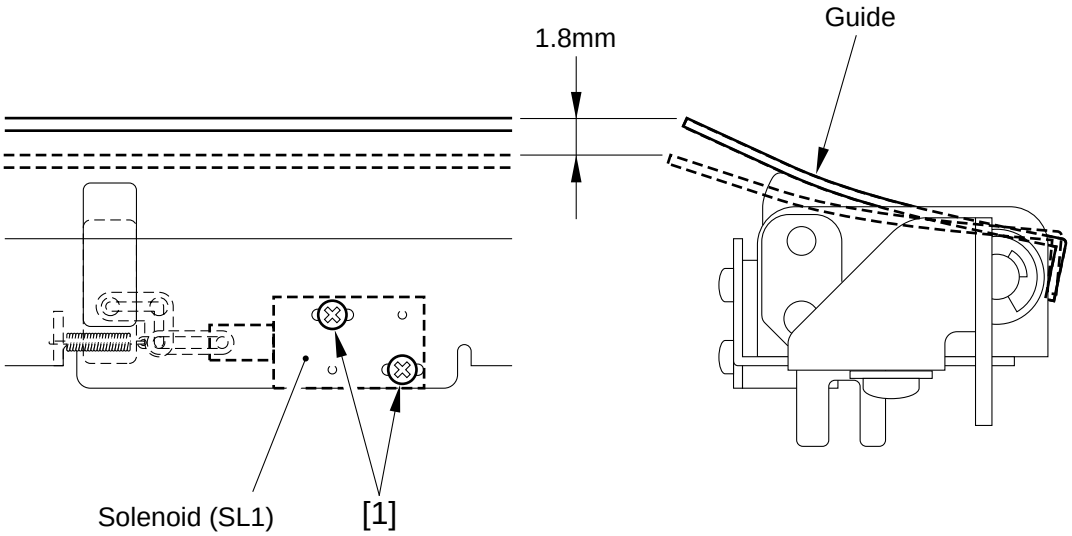


Figure 13-D210

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9.2 Position of the Fixing Cleaning Belt Solenoid (SL2)

a. If the Fixing Cleaning Belt is New

Adjust the position of the solenoid using the screw [1] so that the movement of the drive lever will be over a distance of 8.6 mm.

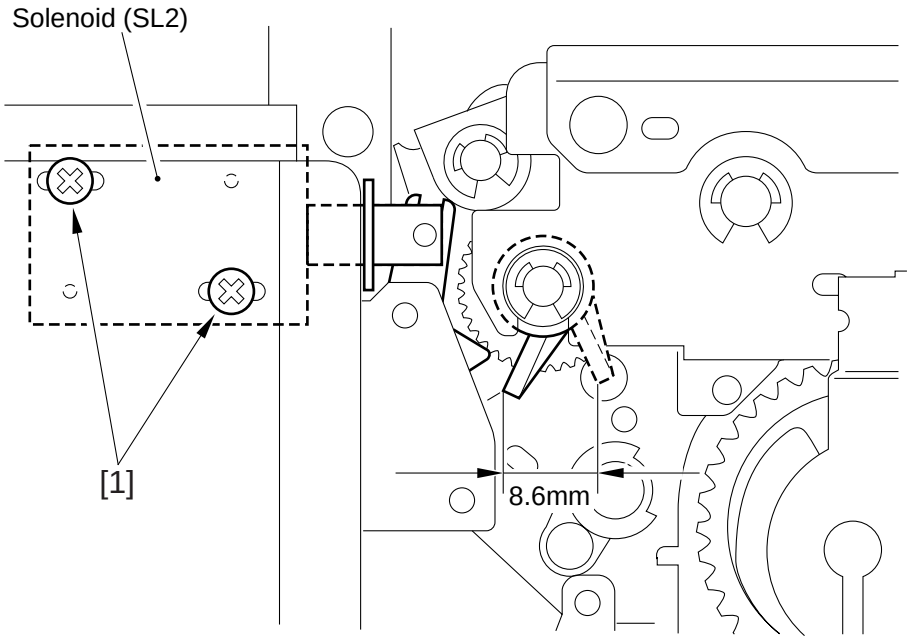


Figure 13-D211a

b. If the Fixing Cleaning Belt Has Been in Use

Before removing the solenoid, take note of the position A of the drive lever when the solenoid is on. After replacing the solenoid, adjust the position using the screw [1] so that it will be the same as it was before removal when the solenoid turns on.

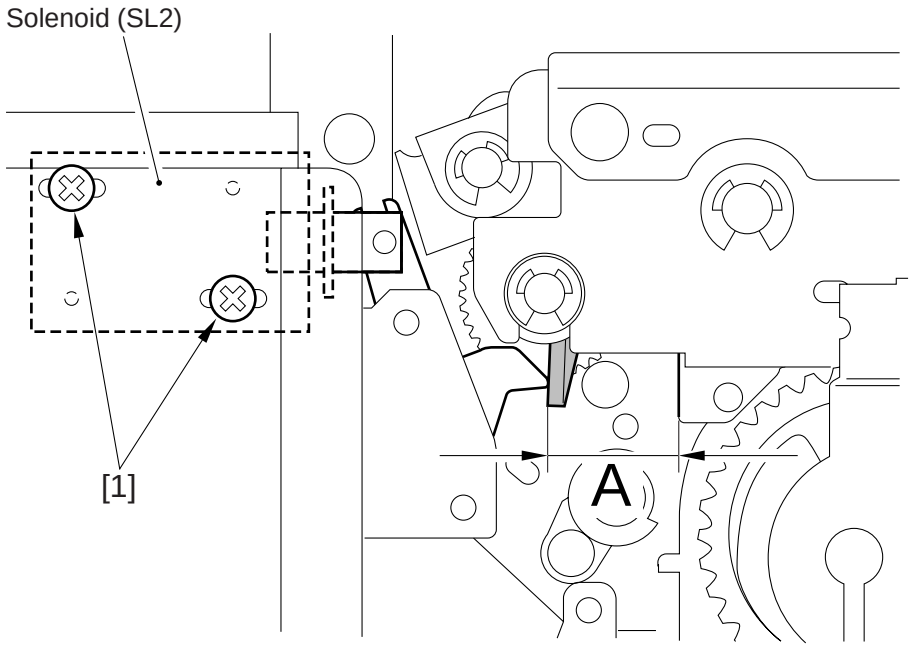


Figure 13-D211b

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9.3 Position of the Delivery Flapper Solenoid (SL3)

Adjust the position of the solenoid using the screw [1] so that the drive lever is fully moved when the solenoid turns on (i.e., the steel core is pulled).

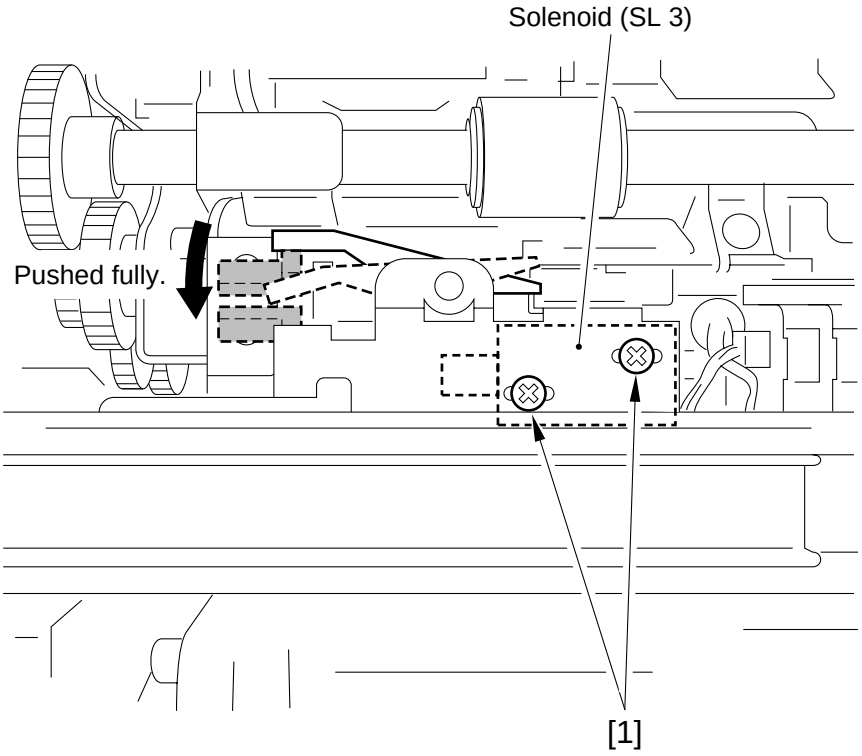


Figure 13-D212

9.4 Position of the Fixing/Feeding Unit Locking Solenoid (SL4)

Adjust the position of the solenoid using the screw [1] so that the locking lever sticks out of the frame by 10.5 ±0.5 mm when the solenoid turns on (steel core is pulled).

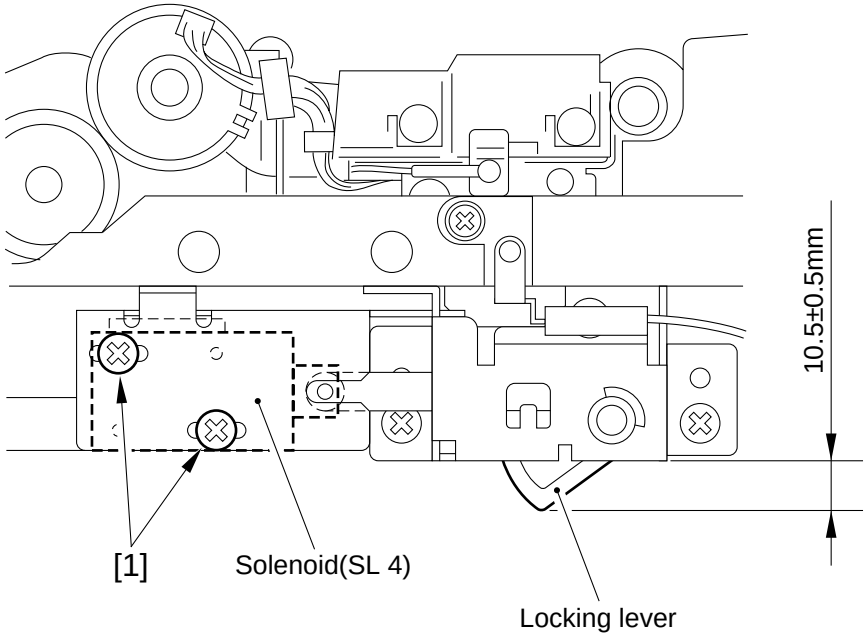


Figure 13-D213

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9.5 Position of the Multifeeder Pickup Latching Solenoid (SL6)

Slide the solenoid into the direction of A to adjust so that the gap between the shutter [1] and the shutter plate [2] is 0.4 ±0.2 mm when the solenoid is pulled.

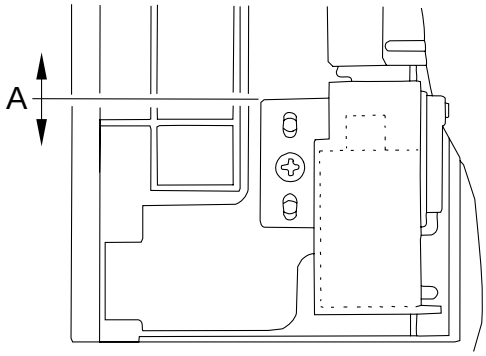


Figure 13-D214a

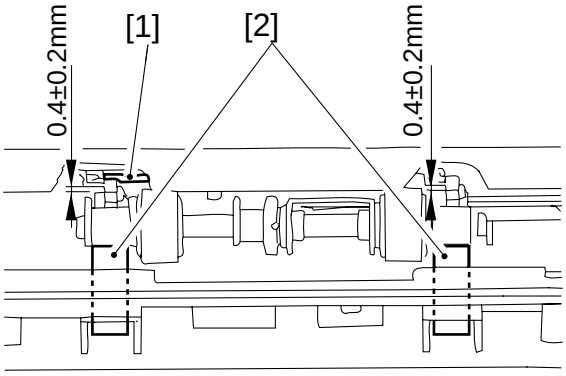


Figure 13-D214b

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9.6 Position of the Deck (right) Pickup Solenoid (SL7)

Adjust pickup solenoid using the screw [1] so that the distance between the bottom face of the pickup unit of each holder and the bottom edge of the bushing of the support plate is 34.5 ±0.5 mm when the plunger of the pickup roller releasing solenoid is pulled as shown (operated as in [1] and [2]).

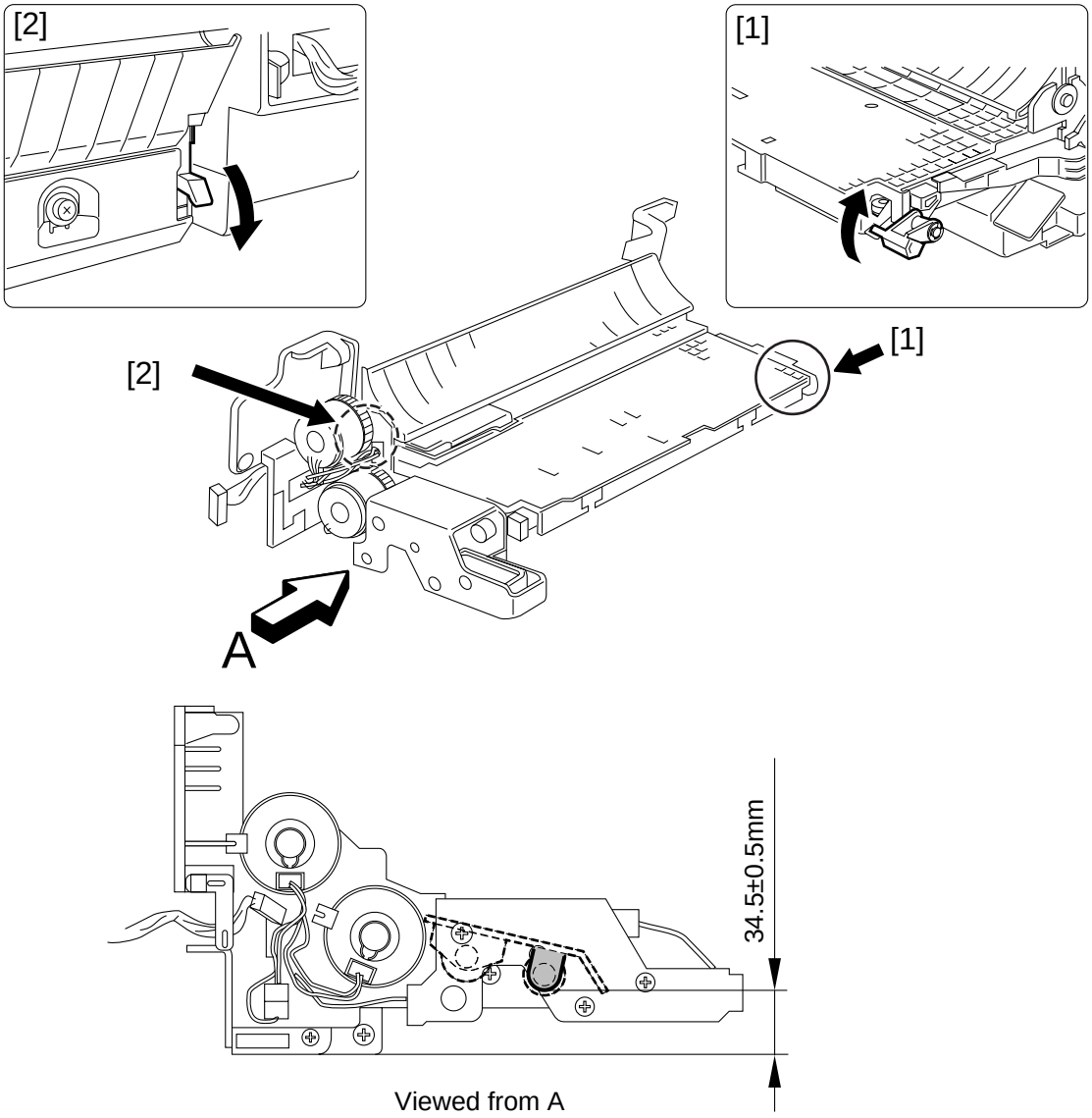


Figure 13-D215

9.7 Position of the Deck (left) Pickup Solenoid (SL8)

Adjust the pickup solenoid using the screw [1] so that the distance between the bottom face of the pickup unit of each holder and the bottom edge of the bushing of the roller support plate is 50 ±0.5 mm when the plunger of the pickup roller releasing solenoid is pulled as shown (operated as in [1] and [2]).

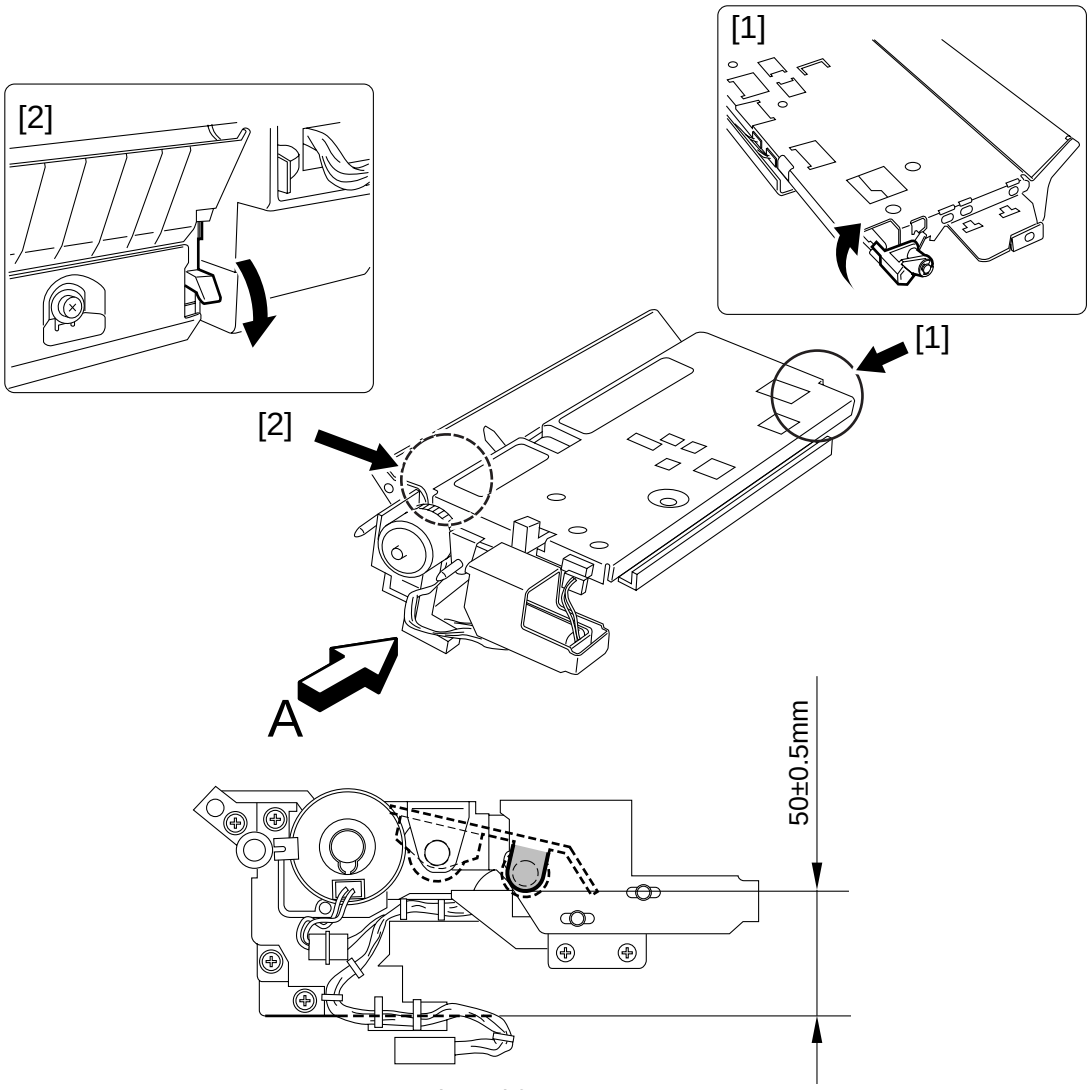


Figure 13-D216

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9.8 Position of the Cassette 3/4 Pickup Solenoid (SL9/10)

Adjust the pickup solenoid using the screw [1] so that the distance between the bottom face of the pickup unit of each holder and the bottom edge of the bushing of the roller support plate is 36 ±0.5 mm when the plunger of the pickup roller releasing solenoid is pulled as shown (operated as in [1] and [2]).

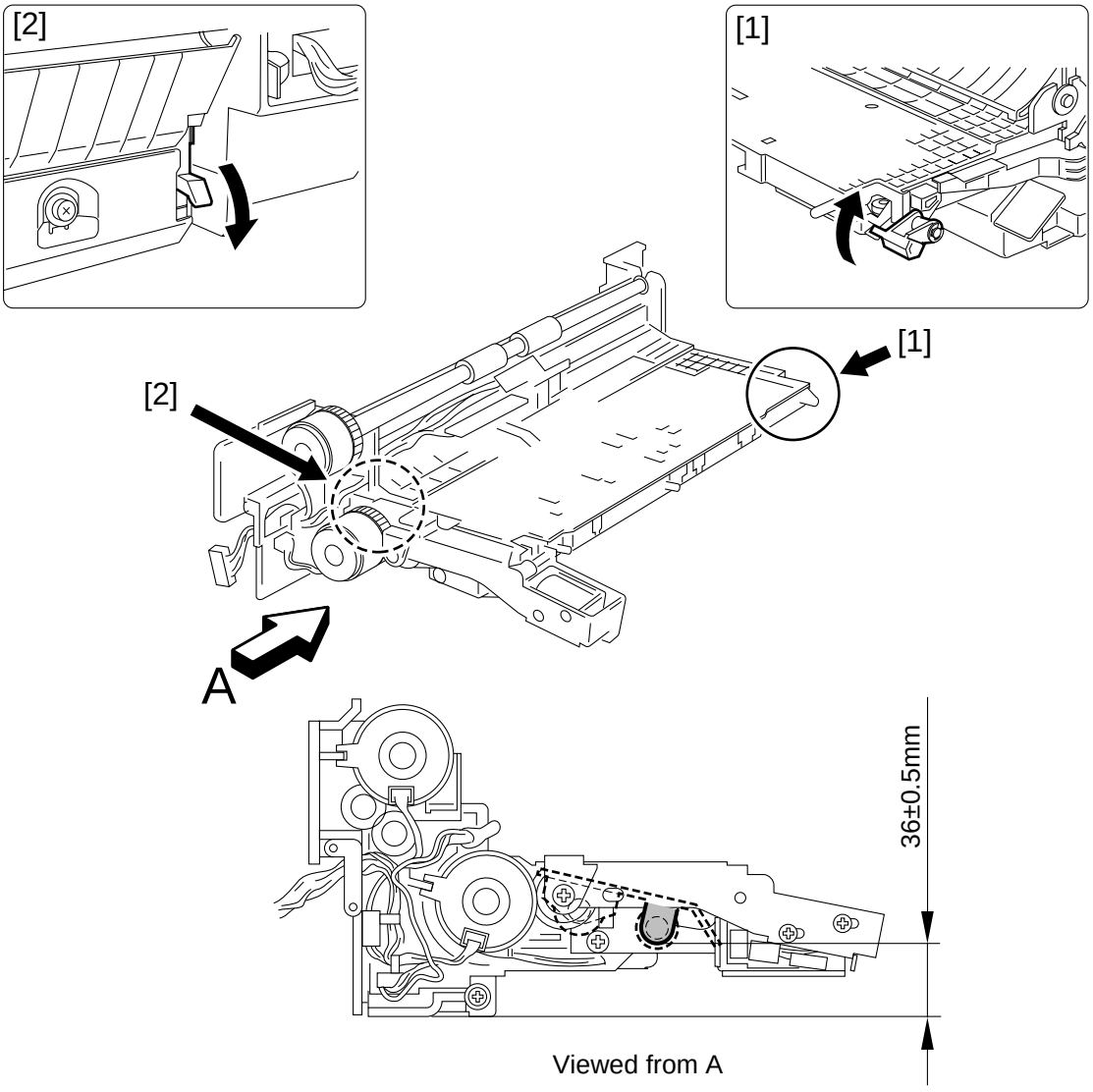


Figure 13-D217

9.9 Position of the Side Paper Deck Pickup Roller Releasing Solenoid

Before removing the deck pickup roller releasing solenoid [1] from the support plate, keep note of the positions of the two fixing screws [2] of the solenoid with reference to the scale graduations on the support plate; or, mark the position of the solenoid (of itself) on the support plate with a scriber.

If you are mounting the solenoid on its own, be sure to secure it in place in its initial position.

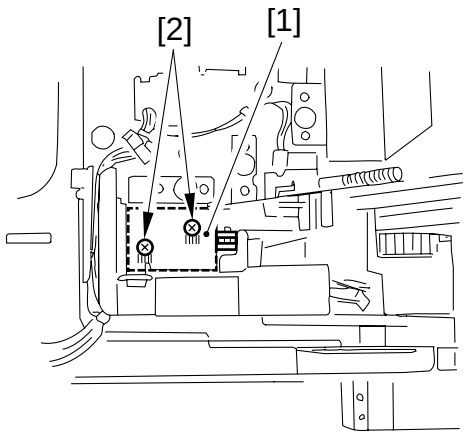


Figure 13-D218

10 Routing the Manual Feed Tray Assembly Side Guide Timing Belt

Butt the rack plate of the manual feed tray against section A (open condition).

Move the slide volume into the direction of B, and attach the timing belt to the pulley.

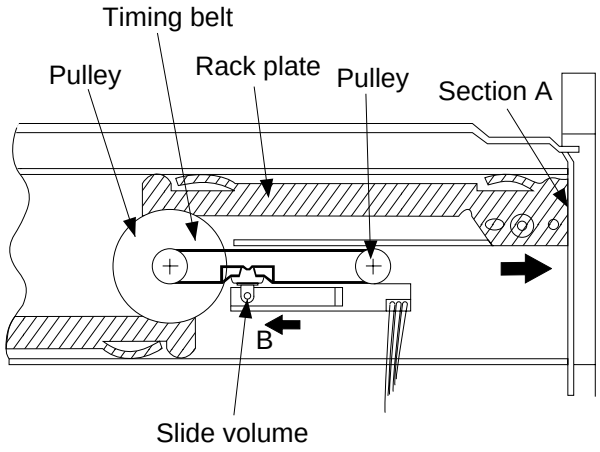


Figure 13-D219

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11 Routing the Drive Belt

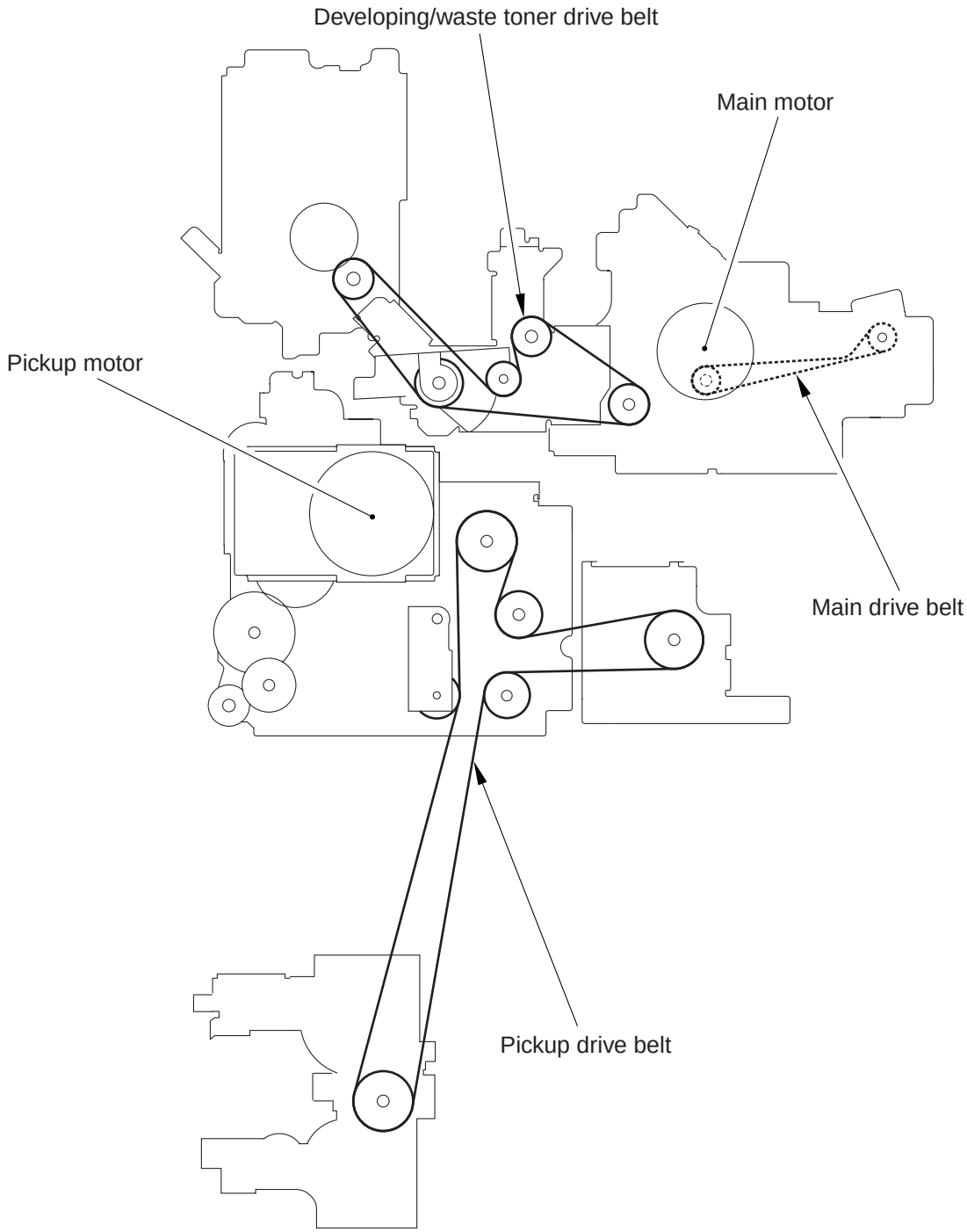


Figure 13-D220

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E. Fixing System

1 Points to Note When Mounting the Fixing Heater

1. Do not touch the surface of the heater.
2. Mount the fixing heater so that its terminal with the longer wire is toward the front. (This applies to both heaters.)
3. Mount the main heater (760 W for the 15A model; 850 W for the 20 A model) on the right side of the fixing assembly (viewing from the front) and the sub heater (400 W for the 15A model; 360 W for the 20A model) to the left side.
4. Connect the fastons of the heater harness at the rear. (Connect the right side to the main heater, and the top side to the sub heater when viewing from the rear.)

2 Position of the Fixing Assembly Inlet Guide

Points to Note When Adjusting in the Field

- The inlet guide must be mounted as shown in the diagram.
- The inlet guide must lower when the solenoid (SL1) turns on.
- The inlet guide must be level so that the difference in height between its front and rear must be within 0.5 mm.
- The inlet guide must be adjusted for height by loosening the fixing screw on the "height adjusting support plate."

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Height of the Fixing Assembly Inlet Guide

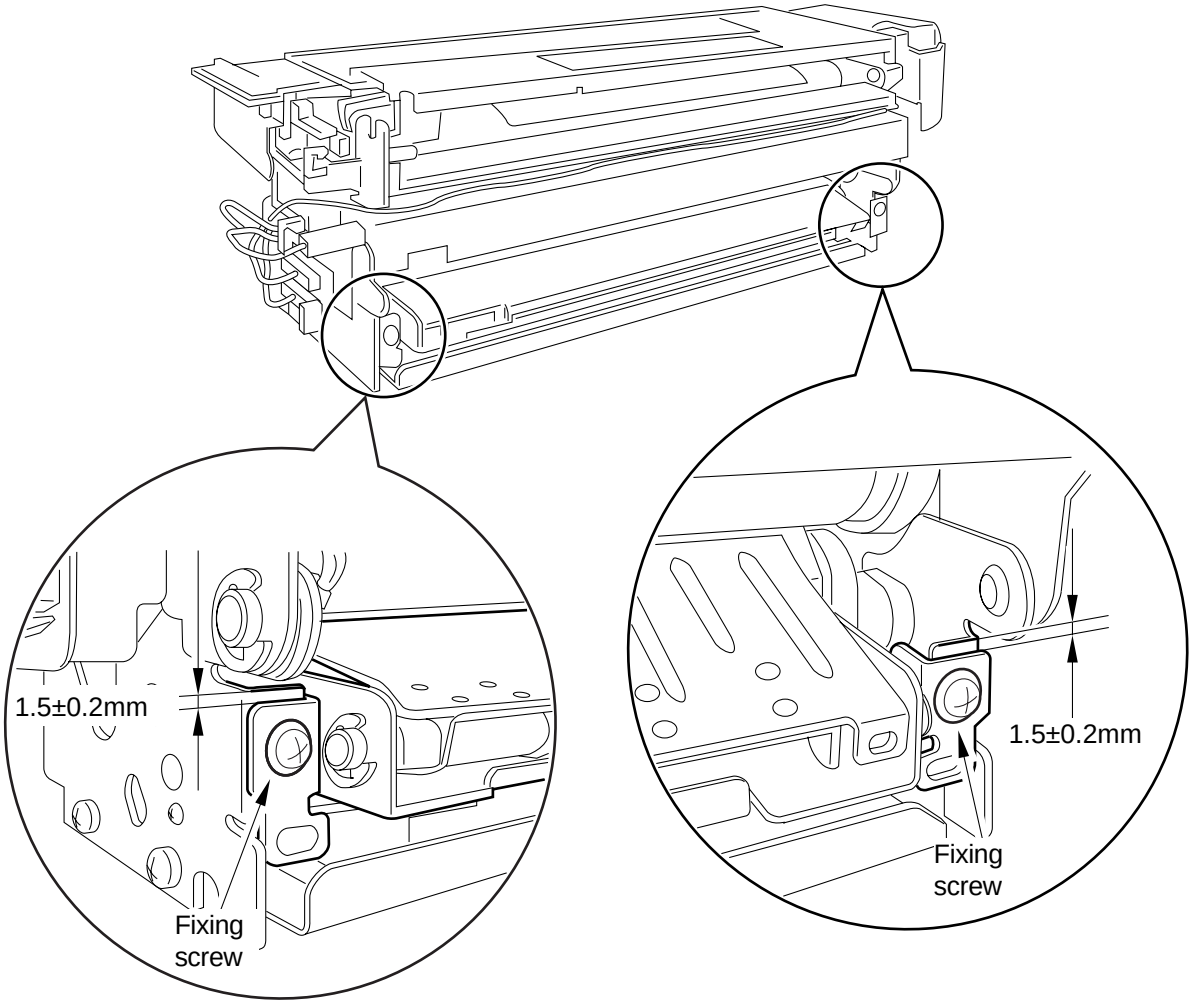


Figure 13-E201

Caution:

You would have to adjust the position of the inlet guide if you removed the inlet guide mount. Do not loosen the fixing screw on the inlet guide to avoid adjustment. If the fixing screw has been loosened for some reason, be sure to tighten it back in reference to the scale graduations on the fixing assembly mount.

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3 Adjusting the Lower Roller Pressure (nip)

The nip width is correct if it is as indicated in Table 13-E201. Otherwise, adjust it using the pressure adjusting nut.

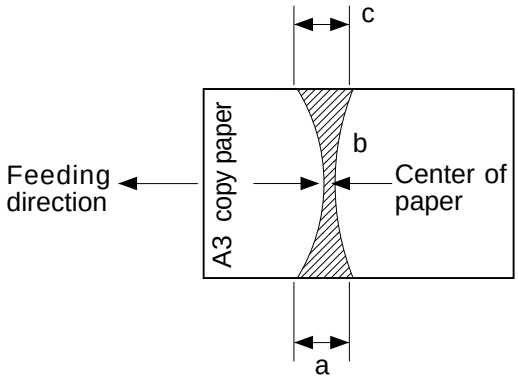


Figure 13-E202

Caution:
a and c are points 10 mm from both edges of the paper.

Dimensions	Measurements*
b	7.3±0.5mm
l a-c l	0.5 mm or less

*Taken when the upper and lower rollers have sufficiently been heated.

Table 13-E201

a. Measuring the Nip Width

1) Place A3 copy paper on the manual feed tray.
2) Select COPIER>FUNCTON>FIXING>NIP-CHK in service mode, and discharge the paper. A3 copy paper will be picked up and discharged as a copy (Figure 13-E202).

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F. Laser Exposure System

1	After Replacing the Laser Unit

1) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
2) Disconnect the power plug.

Caution:
The machine remains powered as long as the power plug is connected to the power outlet even after the main power switch has been turned off. Be sure to disconnect the power plug.

3) Replace the laser unit.
4) Take notes of the values recorded on the label (LA-PWR-A/B, LA-DELAY) of the new laser unit.
5) After mounting, connect the power plug, and turn on the main power switch and the control panel power switch.
6) Enter the values from step 4) in service mode (COPIER>ADJUST>LASER>LA-PWR-A/B, COPIER>ADJUST>LASER>LA-DELAY).

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2 Checking the Laser Power

1) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
2) Disconnect the power plug from the power outlet.
3) Remove the image processor cover according to the instructions in the following: Chapter 4>IV.B "Removing the Image Processor PCB."

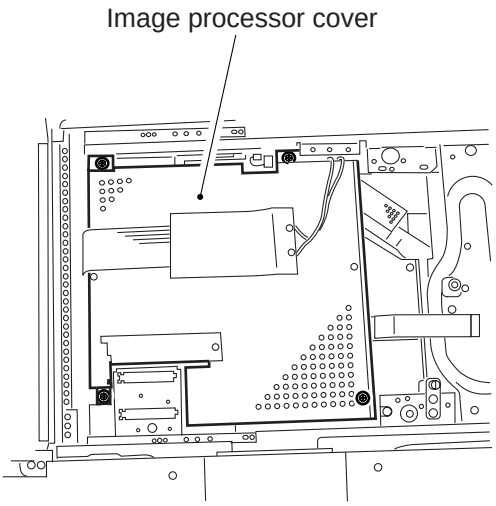


Figure 13-F201

4) Open the laser power checker inlet cover.

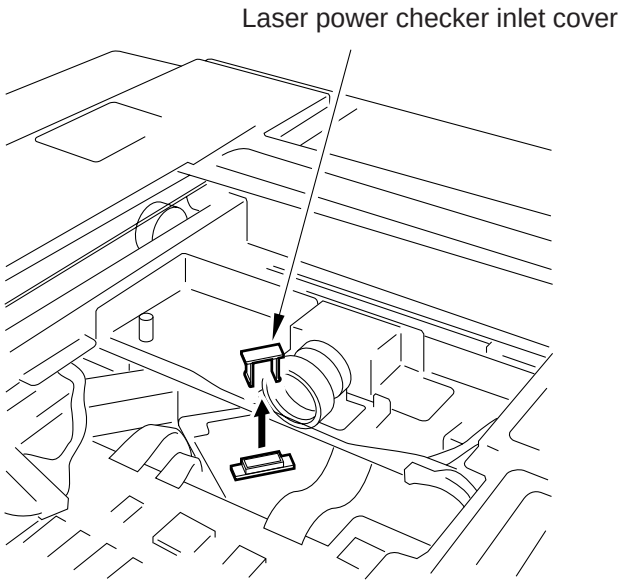


Figure 13-F202

5) Shift the switch on the laser power checker (FY9-4013) to '2'.

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6) Orient the light-receiving face of the laser power checker as shown, and insert it.

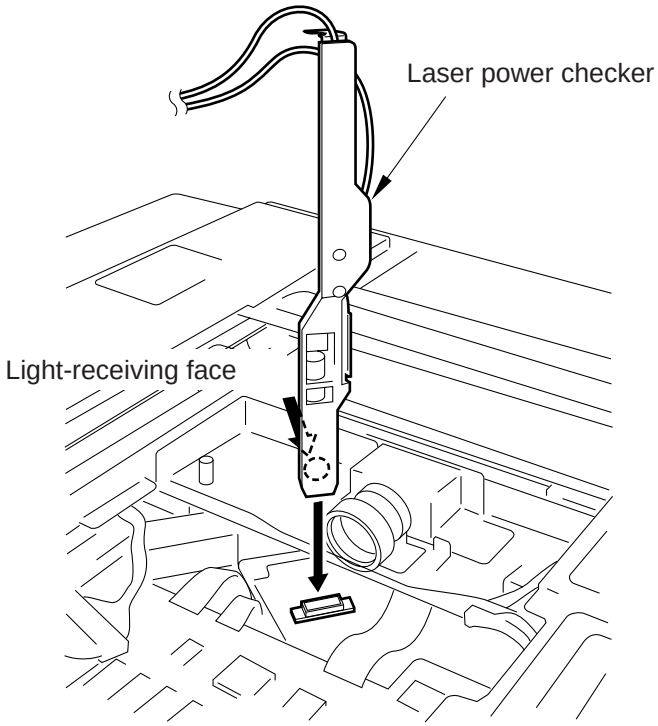


Figure 13-F203

7) Insert the lead wire of the laser power checker into the digital multimeter.

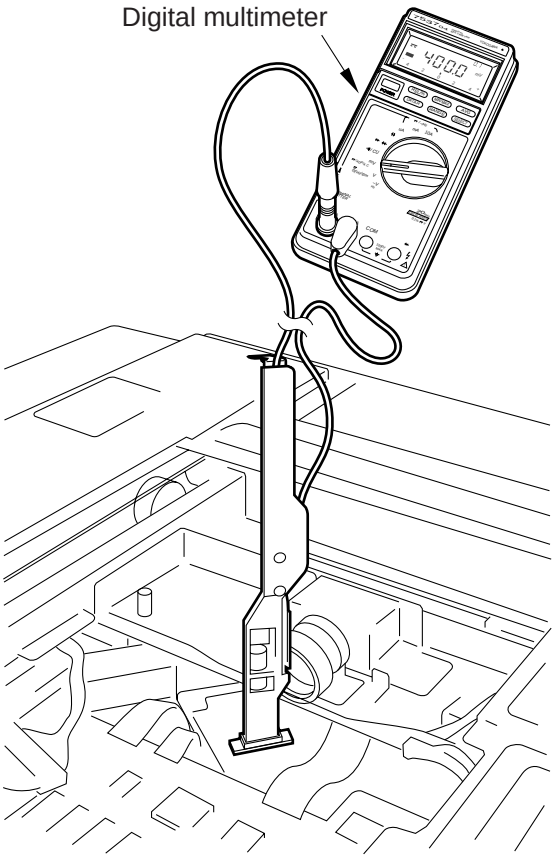


Figure 13-F204

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8) Connect the power plug to the power outlet, and turn on the main power switch and the control panel power soft switch.
9) Select COPIER>FUNCTION>LASER in service mode.
10) Select POWER-A, and press the OK key.
11) Check to see if the reading of the digital multimeter is between 6 and 8 mV so that the power of the laser A is at a correct level.
12) Select POWER-B, and press the OK key.
13) Check to see if the reading of the digital multimeter is between 6 and 8 mV so that the power of the laser B is at a correct level.

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G. Electrical Parts

1	After Replacing the CCD Unit

1) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
2) Disconnect the power plug.

Caution:
The copier remains powered as long as it is connected to the power outlet even after the main power switch has been turned off. Be sure to disconnect the power plug.

3) Replace the CCD unit.
4) After mounting, connect the power plug to the power outlet, and turn on the main power switch and the control panel power switch.
5) Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
6) Record the new values when all items of COPIER>ADJUST>CCD and the data of COPIER>ADJUST>LAMP>L-DATA have been updated.

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2 After Replacing the Image Processor PCB

1) Make settings in user mode except the following:
   - adjust/clean>change middle staple position
   - adjust/clean>change double staple width
2) Record the setting of the following in service mode:
   - item A
3) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
4) Disconnect the power plug from the power outlet.

Caution:
The machine remains powered as long as the power plug is connected to the power outlet even after the main power switch has been turned off. Be sure to disconnect the power plug.

5) Replace the image processor PCB.
6) Take notes of the values (IP-DELAY) recorded on the new image processor PCB.

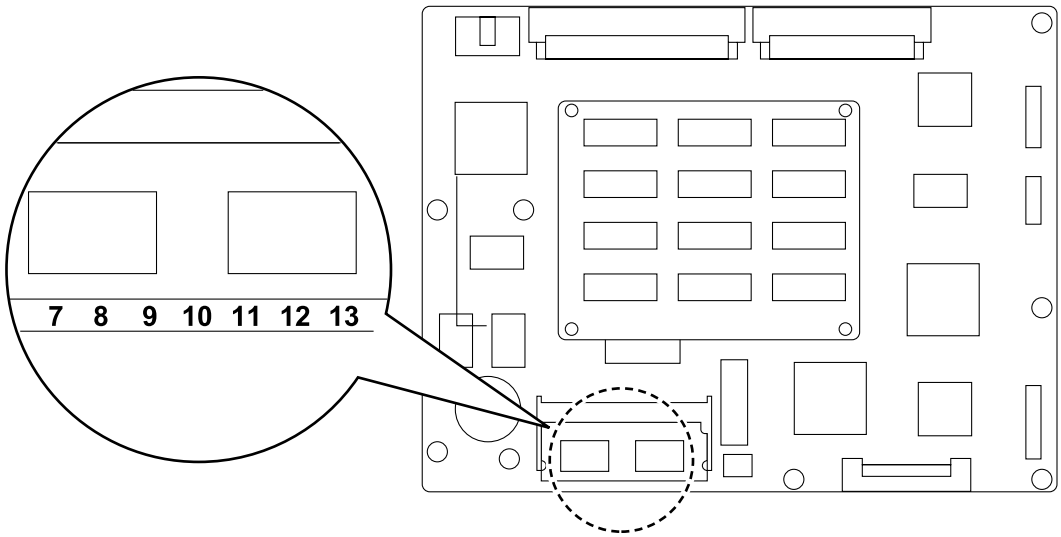


Figure 13-G201

7) After mounting, connect the power plug, and turn on the main power switch and the control panel power switch.
8) Execute COPIER>FUNCTION>CLEANER>IP in service mode.
9) Turn off and then on the main power switch, and turn on the control panel power switch.
10) Enter the settings of the user mode/service mode that have been recorded.
11) Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
12) Record the new values when all items of COPIER>ADJUST>CCD and the data of COPIER>ADJUST>LAMP>L-DATA have been updated.
13) Enter the values from step 6) in service mode (COPIER>ADJUST>LASER>IP-DELAY).

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3 After Replacing the MFC PCB

1) Take notes in user mode except the following:
   - adjust/clean>change middle staple position
   - adjust/clean>change double staple width
2) Record the setting of the following in service mode:
   - item B
3) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
4) Disconnect the power plug from the power outlet.

Caution:
The machine remains powered as long as the power plug is connected to the power outlet even after the main power switch has been turned off. Be sure to disconnect the power plug.

5) Replace the MFC PCB.
6) Check to make sure that the setting of the DIP switch on the new MFC PCB is the same as the DIP switch on the removed MFC PCB.
7) After mounting, connect the power plug to the power outlet, and turn on the main power switch and the control panel power switch.
8) Execute COPIER>FUNCTION>CLEAR>MF-CON in service mode.
9) Turn off and then on the main power switch, and turn on the control panel power switch.
10) Record the settings from the previous step in user mode/service mode.

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4 After Replacing the Hard Disk

1) Take notes in user mode for the following:
   - set image server spec>register/set mail box
   - set image server spec>set image server size
2) Inform the user that the following will be lost and obtain his/her approval:
   - form images in memory
   - images in mail box
3) As necessary take notes of the following in service mode (the data will be lost):
   - COPIER>DISPLAY>JAM
   - COPIER>DISPALY>ERR
   - COPIER>COUNTER>JOB>all items
4) Check to make sure that the data lamp on the control panel is off, and turn off the main power switch.
5) Disconnect the power plug from the power outlet.

Caution:
The machine remains powered as long as the power plug is connected to the power outlet even after the main switch has been turned off. Be sure to disconnect the power plug from the power outlet.

6) Replace the hard disk.
7) After mounting, connect the power plug, and turn on the main power switch and the control power switch.
8) Execute COPIER>FUNCTION>HARD-DISK>FORMAT in service mode.
   If the result of execution is OK, end the work.
   If the result of execution is NG, execute COPIER>FUNCTION>HRD-DISK>SCANDISK.
   If the result is NG once again, replace the hard disk (it is likely to be faulty).

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5 After Replacing the DC Controller PCB

No particular work is needed in conjunction with the replacement of the DC controller PCB.

6 Checking the Surface Potential Control System

a. Outline

If an image fault occurs, it is important first to find out whether the cause is in the latent static formation block (including the photosensitive drum and the potential control system) or the development/transfer block, requiring a check on the surface potential, which may be checked in service mode.

b. Disabling Auto Control

The auto control mechanism may be disabled as one way of finding out whether the corona current control, lamp intensity control, or developing bias control mechanism is faulty ("non-auto control mode" hereafter).

Non-auto control mode, further, may be used as an emergency measure in response to a fault in any of the auto control mechanisms.

Keep in mind that each output in non-auto control will be fixed to its standard setting.

1. Steps
   1) Select COPIER>OPTION>BODY>PO-CNT in service mode; then, enter '0', and press the OK key.
   2) Press the Reset key twice.

Caution:

In non-auto control mode, all settings for corona current control, light intensity control, and developing bias control will automatically be set to the standard settings stored in the ROM.

2. Making Use of Non-Auto Control Mode

If an image fault occurs, use it to find out whether the cause is on the input side or the output side of the microprocessor on the DC controller PCB.

If the images made in non-auto control mode are relatively better, the potential measurement unit or the DC controller PCB may be faulty.

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c. Zero-Level Check

A "zero level check" may be used as a means to find out the condition of the surface potential control circuit.

Reference:

A zero-level check is to find out whether a microprocessor is reading 0 V when the surface potential of the drum is 0 V.

A zero-level check enables a check on the microprocessor on the DC controller PCB and the measuring unit, and it may be either of the following two ways; method 1 enables a check on the level shift circuit on the DC controller PCB, while method 2 enables a check on the potential measurement circuit:

1. Method 1

1) Turn off the power switch.
2) Short J522-1 and -2 on the DC controller PCB with a jumper wire, and disconnect the connector J3 of the potential control PCB.

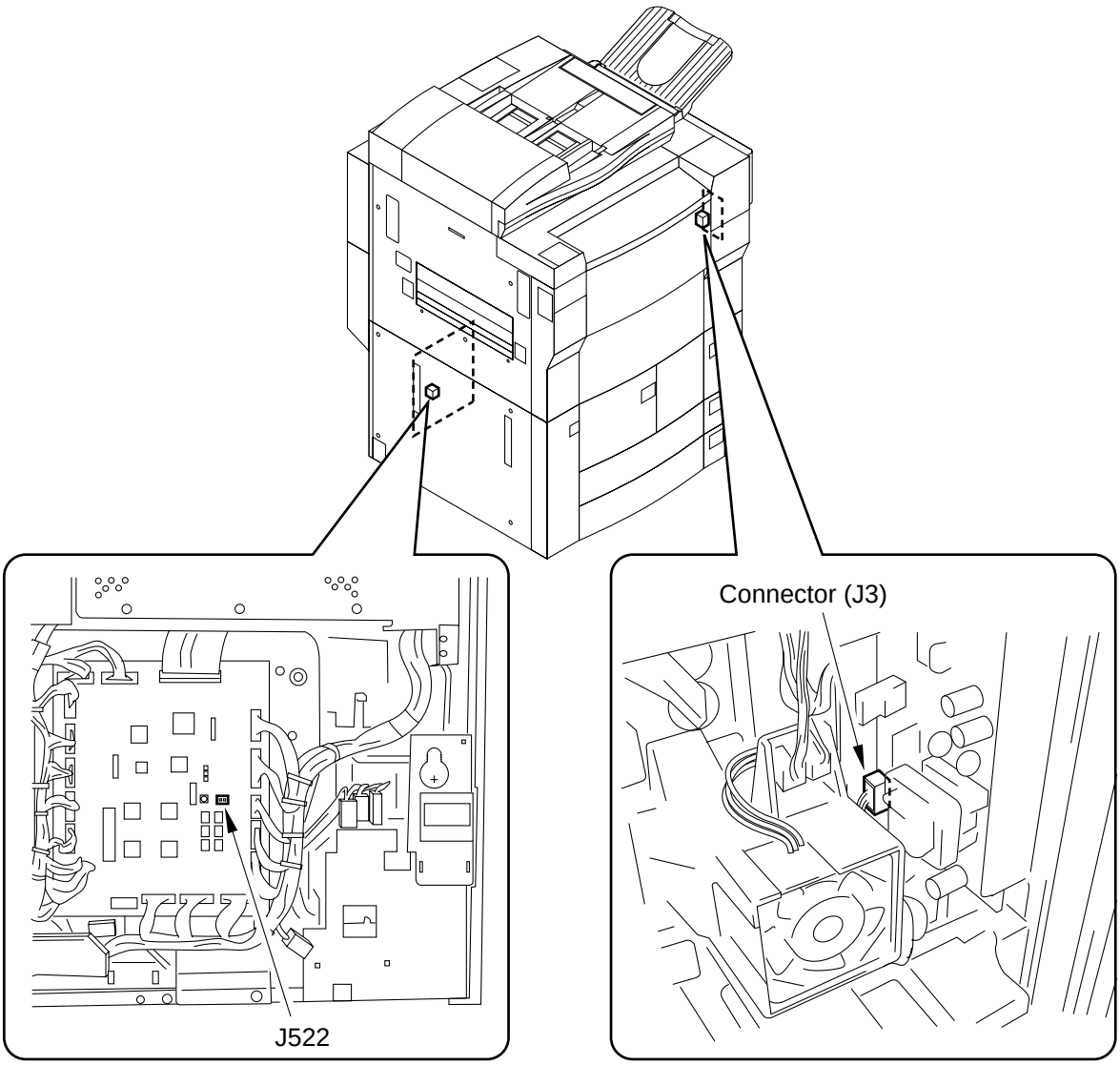


Figure 13-G202

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3) Fit the door switch actuator into the door switch assembly, and turn on the power switch.
4) Select COPIER>DISPLAY>DPOT>DPOT-K in service mode, and check to make sure that the reading during initial rotation is between 0 and 30.

If the reading is not between 0 and 30, the DC controller PCB may be faulty.

5) Turn off the power switch, and detach the door switch actuator.
6) Remove the door switch actuator.
6) Detach the jumper wire from the DC controller PCB.
7) Connect the connector to J3 on the potential control circuit.
8) Turn on the power switch.

2. Method 2
1) Turn off the power switch.
2) Remove the developing assembly, and slide out the process unit.
3) Disconnect the connector of the potential sensor.

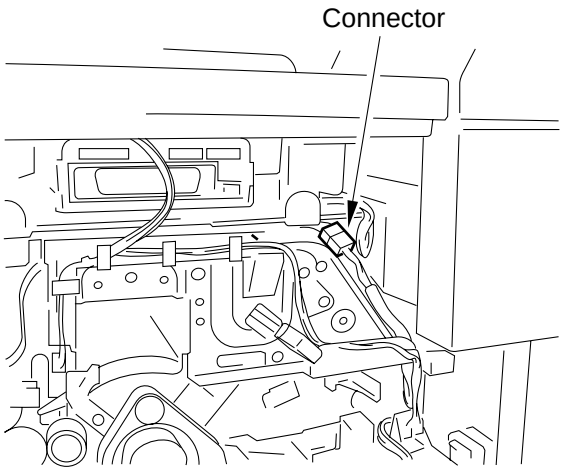


Figure 13-G203

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4) Remove the two screws, and replace the potential sensor support plate.

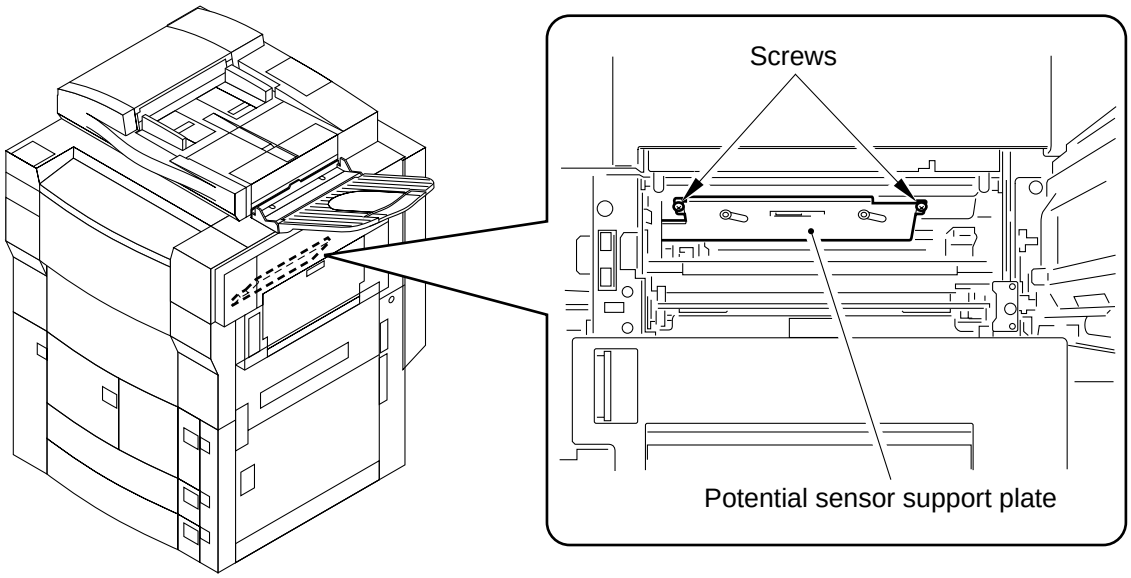


Figure 13-G204

5) Put back the developing assembly and the process unit.
6) Connect the connector of the potential sensor.

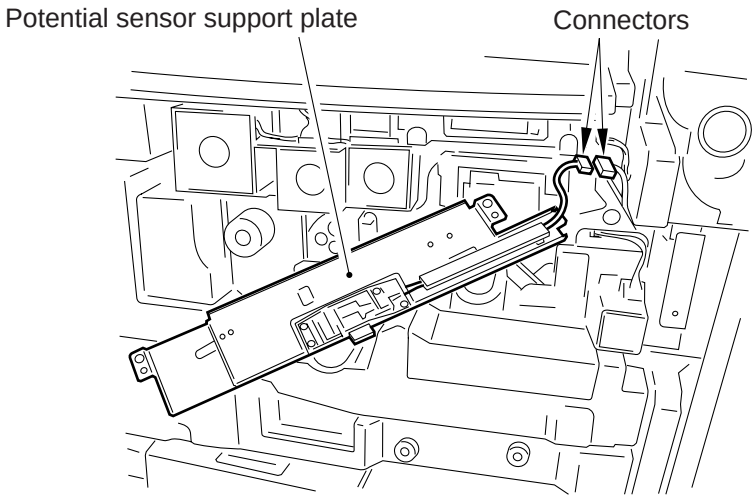


Figure 13-G205

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7) Attach the potential sensor tester electrode (FY9-3041) to the potential sensor.

Caution:
When attaching the tester electrode to the potential sensor, take care so that the magnet on the meter electrode will not come into contact with the potential sensor cover.

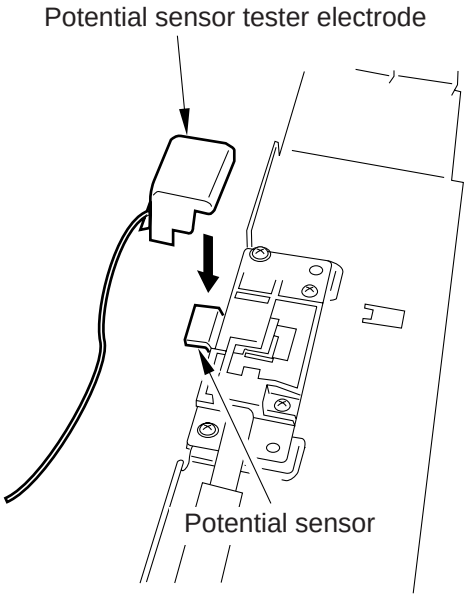


Figure 13-G206

8) Connect the cable of the potential sensor tester electrode to the support metal plate (GND) of the potential measurement PCB.

Caution:
Be sure never to bring the clip into contact with the cover of the sensor. Keep it sufficiently away from the window of the sensor.

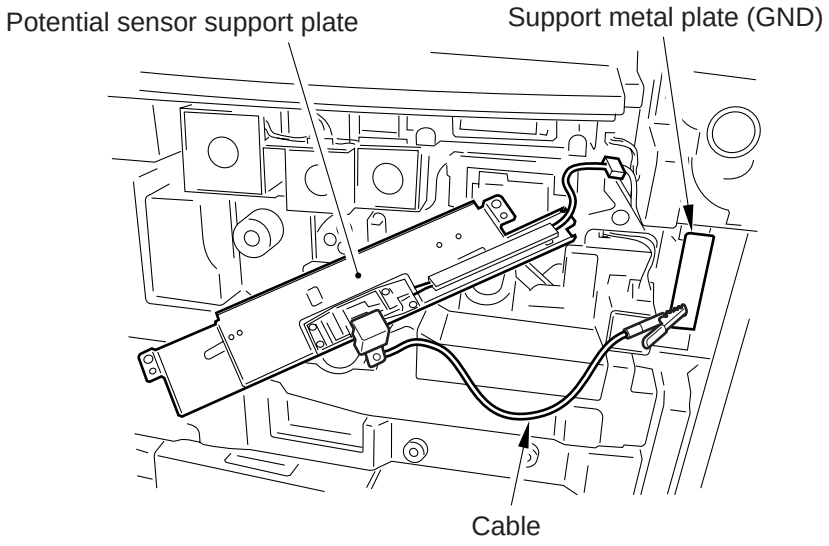


Figure 13-G207

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9) Fit the door switch auto control into the door switch assembly.
10) Turn on the power switch.

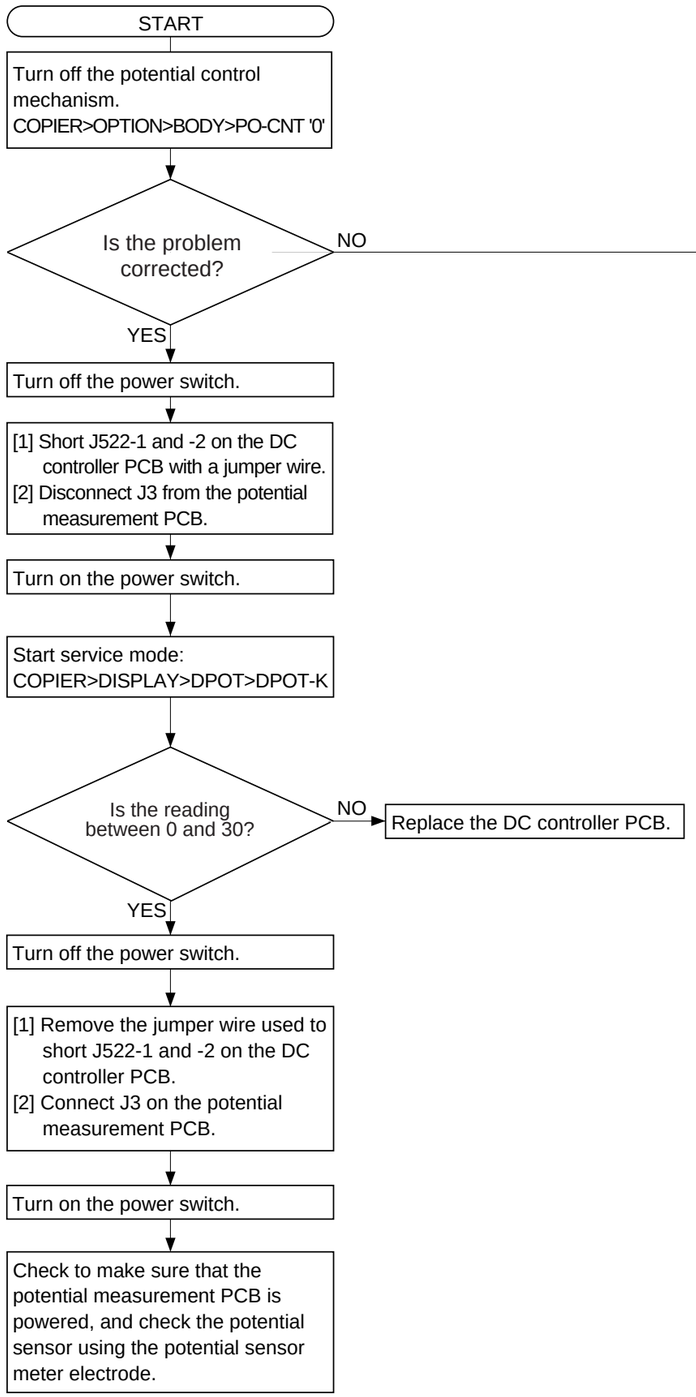
Caution:
Do not touch the potential sensor after turning on the power switch.

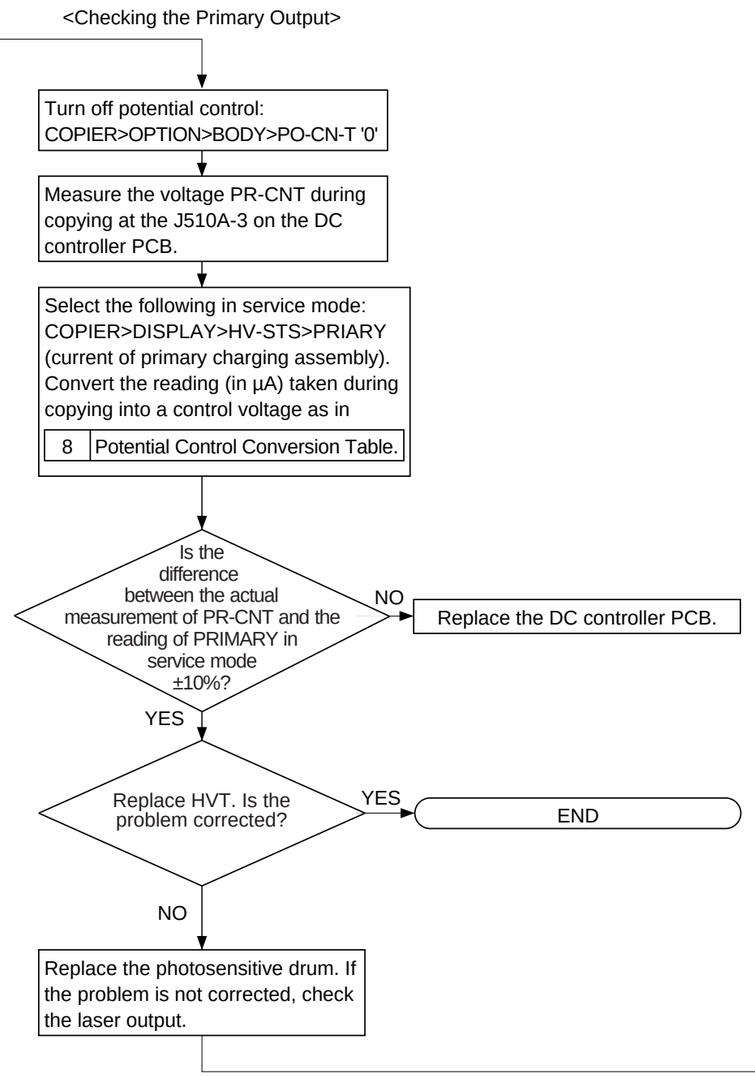
11) Select COPIER>DISPLAY>DPOT>DPOT-K in service mode, and check that the reading during initial rotation is between 0 and 30.

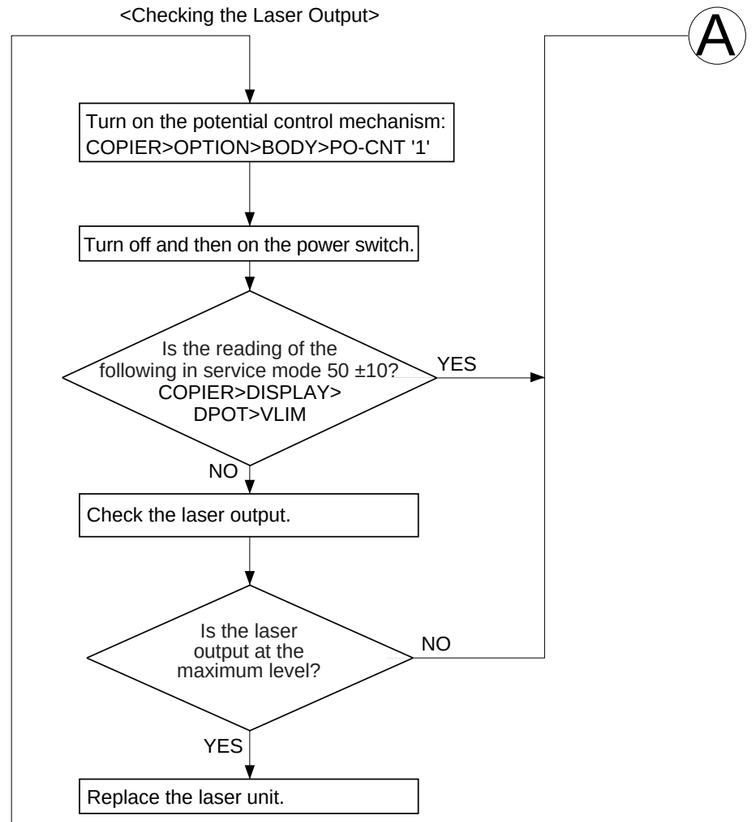
Reference:
1. If the result in method 1 is as indicated, and the result in method 2 is not as indicated, suspect dirt on the sensor or a fault in the potential measurement unit.
2. If the results in method 1 and method 2 are as indicated, assume that the signal path from the potential sensor unit to the microprocessor on the DC controller PCB is normal and the operation in general is also normal.

12) Turn off the power switch.
13) Detach the potential sensor meter electrode.
14) Mount the potential sensor support plate.
15) Turn on the power switch.

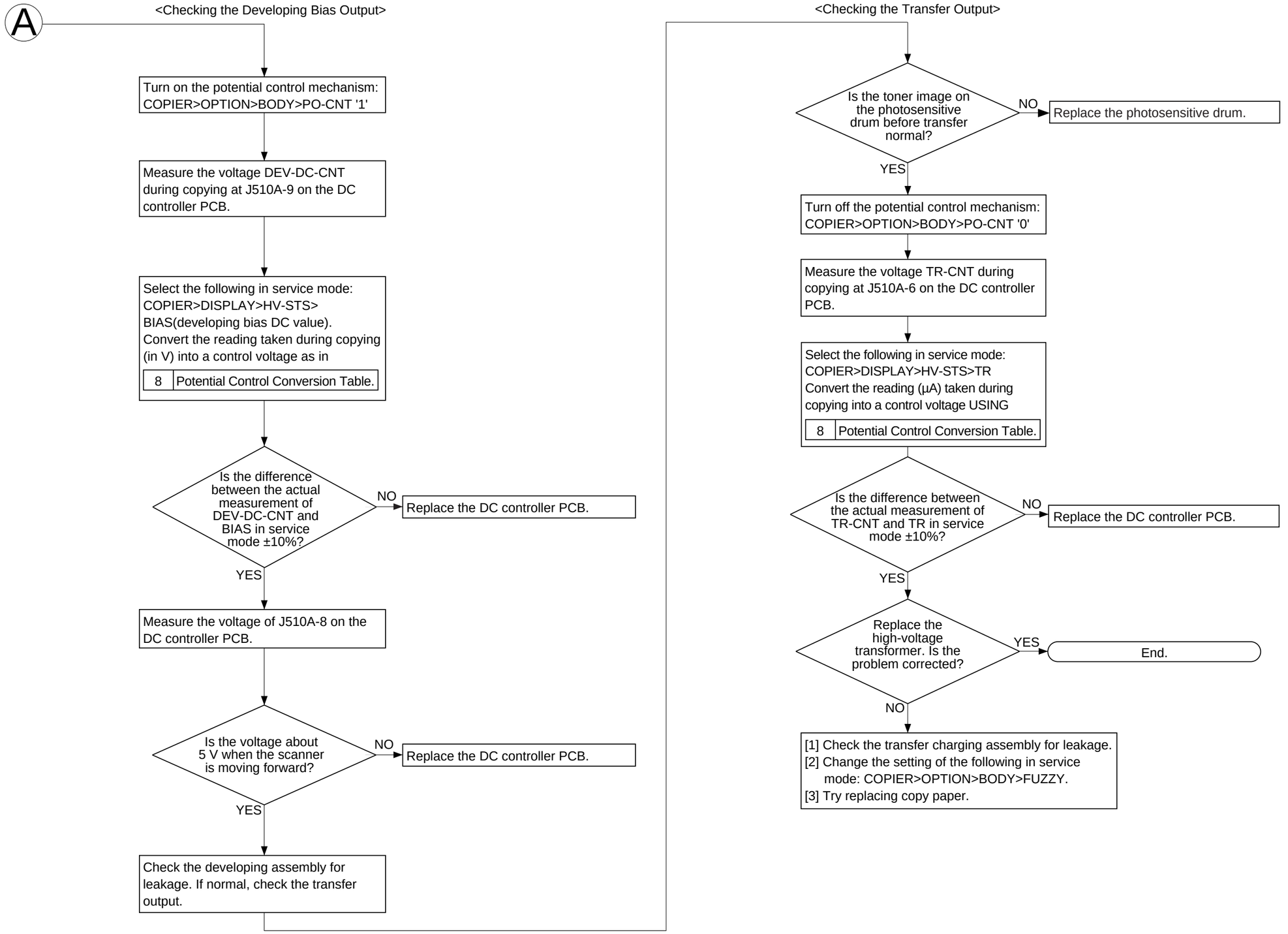
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START
Turn off the potential control mechanism.
COPIER>OPTION>BODY>PO-CNT '0'
Is the problem corrected?
NO
YES
Turn off the power switch.
[1] Short J522-1 and -2 on the DC controller PCB with a jumper wire.
[2] Disconnect J3 from the potential measurement PCB.
Turn on the power switch.
Start service mode:
COPIER>DISPLAY>DPOT>DPOT-K
Is the reading between 0 and 30?
NO
Replace the DC controller PCB.
YES
Turn off the power switch.
[1] Remove the jumper wire used to short J522-1 and -2 on the DC controller PCB.
[2] Connect J3 on the potential measurement PCB.
Turn on the power switch.
Check to make sure that the potential measurement PCB is powered, and check the potential sensor using the potential sensor meter electrode.


<Checking the Primary Output>
Turn off potential control:
COPIER>OPTION>BODY>PO-CN-T '0'
Measure the voltage PR-CNT during copying at the J510A-3 on the DC controller PCB.
Select the following in service mode:
COPIER>DISPLAY>HV-STS>PRIARY
(current of primary charging assembly).
Convert the reading (in µA) taken during copying into a control voltage as in
8 Potential Control Conversion Table.
Is the difference between the actual measurement of PR-CNT and the reading of PRIMARY in service mode ±10%?
NO
Replace the DC controller PCB.
YES
Replace HVT. Is the problem corrected?
YES
END
NO
Replace the photosensitive drum. If the problem is not corrected, check the laser output.



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A
<Checking the Developing Bias Output>
Turn on the potential control mechanism: COPIER>OPTION>BODY>PO-CNT '1'
Measure the voltage DEV-DC-CNT during copying at J510A-9 on the DC controller PCB.
Select the following in service mode: COPIER>DISPLAY>HV-STS> BIAS(developing bias DC value). Convert the reading taken during copying (in V) into a control voltage as in
8 Potential Control Conversion Table.
Is the difference between the actual measurement of DEV-DC-CNT and BIAS in service mode ±10%?
NO
Replace the DC controller PCB.
YES
Measure the voltage of J510A-8 on the DC controller PCB.
Is the voltage about 5 V when the scanner is moving forward?
NO
Replace the DC controller PCB.
YES
Check the developing assembly for leakage. If normal, check the transfer output.
<Checking the Transfer Output>
Is the toner image on the photosensitive drum before transfer normal?
NO
Replace the photosensitive drum.
YES
Turn off the potential control mechanism: COPIER>OPTION>BODY>PO-CNT '0'
Measure the voltage TR-CNT during copying at J510A-6 on the DC controller PCB.
Select the following in service mode: COPIER>DISPLAY>HV-STS>TR Convert the reading (µA) taken during copying into a control voltage USING
8 Potential Control Conversion Table.
Is the difference between the actual measurement of TR-CNT and TR in service mode ±10%?
NO
Replace the DC controller PCB.
YES
Replace the high-voltage transformer. Is the problem corrected?
YES
End.
NO
[1] Check the transfer charging assembly for leakage.
[2] Change the setting of the following in service mode: COPIER>OPTION>BODY>FUZZY.
[3] Try replacing copy paper.

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8 Potential Control System Conversion Table

Control (V)	Primary (µA)	Developing bias (V)	Pre-transfer (µA)	Transfer (µA)	Separation (µA)
3.00	1,400	0	0	440	100
3.05	1,391	3	-2	437	96
3.10	1,382	7	-4	434	92
3.15	1,373	11	-6	431	88
3.20	1,365	15	-8	429	85
3.25	1,356	18	-10	426	81
3.30	1,347	22	-12	426	77
3.35	1,338	26	-14	420	73
3.40	1,330	30	-16	418	70
3.45	1,321	33	-18	415	66
3.50	1,312	37	-20	412	62
3.55	1,303	41	-22	409	58
3.60	1,295	45	-24	407	55
3.65	1,286	48	-26	404	51
3.70	1,277	52	-28	401	47
3.75	1,268	56	-30	398	43
3.80	1,260	60	-33	396	40
3.85	1,251	63	-35	393	36
3.90	1,242	67	-37	390	32
3.95	1,233	71	-39	387	28
4.00	1,225	75	-41	385	25
4.05	1,216	78	-43	382	21
4.10	1,207	82	-45	379	17
4.15	1,198	86	-47	376	13
4.20	1,190	90	-49	374	10
4.25	1,181	93	-51	371	6
4.30	1,172	97	-53	368	2
4.35	1,163	101	-55	365	-1
4.40	1,155	105	-57	363	-5
4.45	1,146	108	-59	360	-8
4.50	1,137	112	-61	357	-12
4.55	1,128	116	-63	354	-16
4.60	1,120	120	-66	352	-20
4.65	1,111	123	-68	349	-23
4.70	1,102	127	-70	346	-27
4.75	1,093	131	-72	343	-31
4.80	1,085	135	-74	341	-35
4.85	1,076	138	-76	338	-38
4.90	1,067	142	-78	335	-42
4.95	1,058	146	-80	332	-46

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Control (V)	Primary (µA)	Developing bias (V)	Pre-transfer (µA)	Transfer (µA)	Separation (µA)
5.00	1,050	150	-82	330	-50
5.05	1,041	153	-84	327	-53
5.10	1,032	157	-86	324	-57
5.15	1,023	161	-88	321	-61
5.20	1,015	165	-90	319	-65
5.25	1,006	168	-92	316	-68
5.30	997	172	-94	313	-72
5.35	938	176	-96	310	-76
5.40	980	180	-99	308	-80
5.45	971	183	-101	305	-83
5.50	962	187	-103	302	-87
5.55	953	191	-105	299	-91
5.60	945	195	-107	297	-95
5.65	936	198	-109	294	-98
5.70	927	202	-111	291	-102
5.75	918	206	-113	288	-106
5.80	910	210	-115	286	-110
5.85	901	213	-117	283	-113
5.90	892	217	-119	280	-117
5.95	883	221	-121	277	-121
6.00	875	225	-123	275	-125
6.05	866	228	-125	272	-128
6.10	857	232	-127	269	-132
6.15	848	236	-129	266	-136
6.20	840	240	-132	264	-140
6.25	831	243	-134	261	-143
6.30	822	247	-136	258	-147
6.35	813	251	-138	255	-151
6.40	805	255	-140	253	-155
6.45	796	258	-142	250	-158
6.50	787	262	-144	247	-162
6.55	778	266	-146	244	-166
6.60	770	270	-148	242	-170
6.65	761	273	-150	239	-173
6.70	752	277	-152	236	-177
6.75	743	281	-154	233	-181
6.80	735	285	-156	231	-185
6.85	726	288	-158	228	-188
6.90	717	292	-160	225	-192
6.95	708	296	-162	222	-196

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Control (V)	Primary (µA)	Developing bias (V)	Pre-transfer (µA)	Transfer (µA)	Separation (µA)
7.00	700	300	-165	220	-200
7.05	691	303	-167	217	-203
7.10	682	307	-169	214	-207
7.15	673	311	-171	211	-211
7.20	665	315	-173	209	-215
7.25	656	318	-175	204	-218
7.30	647	322	-177	203	-222
7.35	638	326	-179	200	-226
7.40	630	330	-181	198	-230
7.45	621	333	-183	195	-233
7.50	612	337	-185	192	-237
7.55	603	341	-187	189	-241
7.60	595	345	-189	187	-245
7.65	586	348	-191	184	-248
7.70	577	352	-193	181	-252
7.75	568	356	-195	178	-256
7.80	560	360	-198	176	-260
7.85	551	363	-200	173	-263
7.90	542	367	-202	170	-267
7.95	533	371	-204	167	-271
8.00	525	375	-206	165	-275
8.05	516	378	-208	162	-278
8.10	507	382	-210	159	-282
8.15	498	386	-212	156	-286
8.20	490	390	-214	154	-290
8.25	481	393	-216	151	-293
8.30	472	397	-218	148	-297
8.35	463	401	-220	145	-301
8.40	455	405	-222	143	-305
8.45	446	408	-224	140	-308
8.50	437	412	-226	137	-312
8.55	428	416	-228	134	-316
8.60	420	420	-231	132	-320
8.65	411	423	-233	129	-323
8.70	402	427	-235	126	-327
8.75	393	431	-237	123	-331
8.80	385	435	-239	121	-335
8.85	376	438	-241	118	-338
8.90	367	442	-243	115	-342
8.95	358	446	-245	112	-346

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Control (V)	Primary (µA)	Developing bias (V)	Pre-transfer (µA)	Transfer (µA)	Separation (µA)
9.00	350	450	-247	110	-350
9.05	341	453	-249	107	-353
9.10	332	457	-251	104	-357
9.15	323	461	-253	101	-361
9.20	315	465	-255	99	-365
9.25	306	468	-257	96	-368
9.30	297	472	-259	93	-372
9.35	288	476	-261	90	-376
9.40	280	480	-264	88	-380
9.45	271	483	-266	85	-383
9.50	262	487	-268	82	-387
9.55	253	491	-270	79	-391
9.60	245	495	-272	77	-395
9.65	236	498	-274	74	-398
9.70	227	502	-276	71	-402
9.75	218	506	-278	68	-406
9.80	210	510	-280	66	-410
9.85	201	513	-282	63	-413
9.90	192	517	-284	60	-417
9.95	183	521	-286	57	-421
10.00	175	525	-288	55	-425
10.05	166	528	-290	52	-428
10.10	157	532	-292	49	-432
10.15	148	536	-294	46	-436
10.20	140	540	-297	44	-440
10.25	131	543	-299	41	-443
10.30	122	547	-301	38	-447
10.35	113	551	-303	35	-451
10.40	105	555	-305	33	-455
10.45	96	558	-307	30	-458
10.50	87	562	-309	27	-462
10.55	78	566	-311	24	-466
10.60	70	570	-313	22	-470
10.65	61	573	-315	19	-473
10.70	52	577	-317	16	-477
10.75	43	581	-319	13	-481
10.80	35	585	-321	11	-485
10.85	26	588	-323	8	-488
10.90	17	592	-325	5	-492
10.95	8	596	-327	2	-496
11.00	0	600	-330	0	-500

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9 Checking the Environment Sensor

1) Perform the following:
   Select COPIER>DISPLAY>ANALOG in service mode; then, check and record the temperature and the humidity indicated on the control panel.
   data A
   RTMP °C ....data A1
   RHUM % ....data A2
2) Press the Reset key twice, and turn off the power switch.
3) Remove the environment sensor, and insert the environment sensor tool (FY9-3014) in its place.
4) Turn on the power switch, and leave the copier alone for 5 min.
5) Select COPIER>DISPLAY>ANALOG in service mode; then, check and record the temperature and the humidity on the control panel:
   data B
   RTMP °C ....data B1
   RHUM % ....data B2
6) Compare data A and data B.
   - The difference between data A1 and data B1 is 0 ±5.
   - The difference between data A2 and data B2 is 0 ±20.

   If the difference between data A and data B is not as indicated, replace the environment sensor.
7) Press the Reset key twice, and turn off the power switch.
8) Detach the environment sensor tool, and inert the environment sensor.
9) Mount all covers.

Caution:
The environment sensor tool (FY9-3014) is adjusted at the factory to high accuracy. To maintain its performance, be sure to store it in an airtight case with a drying agent.

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10 Checking the Photointerrupters

The copier's photointerrupters may be checked using either its service mode or a conventional meter or the machine's service mode.

a. Using a Meter

1) Set the meter range to 30 VDC.
2) Connect the - probe of the meter to GND of the DC controller PCB.
3) Connect the + probe of the meter to the terminals indicated (DC controller PCB).
4) Make checks as indicated.

b. Using Service Mode

1) Select COPIER>I/O in service mode, and check the appropriate addresses:

Caution:
Take care. Turning on/off a sensor can start a motor or the like.

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Sensor	Connector No. / I/O address	Checks		1/0	Voltage
PS1 Scanner home position sensor	J507-A1	While in standby, move the scanner by hand.	The light-blocking plate is at PS1.	1	5V
	PC		The light-blocking plate is not at PS1.	0	0V
PS3 Image leading edge sensor	J507-A4	While in standby, move the scanner by hand.	When the light-blocking plate is at PS3.	1	5V
	PC		When the light-blocking plate is not at PS3.	0	0V
PS4 Copyboard cover open/closed sensor	J507-B9	While in standby, move the copyboard cover by hand.	The cover is closed.	1	5V
	PC		The cover is opened.	0	0V
PS5 Registration paper sensor	J509-A2	While in standby, put paper over PS5.	Paper is not over PS5.	1	5V
	PC		Paper is over PS5.	0	0V
PS6 Fixing claw jam sensor	J508-B15	While in standby, put paper over PS6.	Paper is not over PS6.	0	0V
	PC		Paper is over PS6.	1	5V
PS7 Fixing cleaning belt sensor	J508-B2	While in standby, put paper over PS7.	Paper is not over PS7.	0	0V
	PC		Paper is over PS7.	1	5V
PS8 Fixing cleaning belt warning sensor	J508-B5	While in standby, put paper over the detecting lever of PS8.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS9 Internal delivery sensor	J508-A2	While in standby, put paper over the detecting lever of PS9.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS10 External delivery sensor	J508-A8	While in standby, put paper over the detecting lever of PS10.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS11 Fixing/feeding unit outlet sensor	J508-A11	While in standby, put paper over the detecting lever of PS11.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS12 Duplexing reversal sensor	J519-B6	While in standby, put paper over the detecting lever of PS12.	Paper is inserted.	0	0V
	PC		Paper is removed.	1	5V
PS13 U-turn sensor	J519-B7	While in standby, put paper over the detecting lever of PS13.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V

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Sensor	Connector No. / I/O address	Checks		1/0	Voltage
PS14 Pre-confluence sensor	J519-B8	While in standby, put paper over the detecting lever of PS14.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS15 Post-confluence sensor	J519-B9	While in standby, put paper over the detecting lever of PS15.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS16 Reversal sensor	J508-A5	While in standby, put paper over the detecting lever of PS16.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS17 Manual feed tray paper sensor	J510-B8	While in standby, move the rear partition plate by hand.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS18 Horizontal registration sensor	J519-B1	While in standby, move the side guide by hand.	The light-blocking plate is not at PS18.	1	5V
	PC		The light-blocking plate is at PS18.	0	0V
PS19 Waste toner full sensor	J514-A2	While in standby, put paper over the detecting lever of PS19.	Paper is inserted.	1	5V
	PC		Paper is removed.	0	0V
PS20 Front deck (right) pickup sensor	J511-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS20.	1	5V
	PC		The light-detecting plate is not at PS20.	0	0V
PS21 Front deck (right) lifter sensor	J511-A6	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS21.	1	5V
	PC		The light-detecting plate is not at PS21.	0	0V
PS22 Front deck (right) paper sensor	J511-A9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS22.	1	5V
	PC		The light-detecting plate is not at PS22.	0	0V
PS23 Front deck (right) open/closed sensor	J511-B5	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS23.	1	5V
	PC		The light-detecting plate is not at PS23.	0	0V
PS24 Front deck (right) limit sensor	J511-B8	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS24.	1	0V
	PC		The light-detecting plate is not at PS24.	0	5V
PS25 Front deck (left) pickup sensor	J518-A8	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS25.	1	0V
	PC		The light-detecting plate is not at PS25.	0	5V
PS26 Front deck (right) feeding sensor	J519-B10	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS26.	1	0V
	PC		The light-detecting plate is not at PS26.	0	5V
PS27 Front deck (right) feeding sensor	J511-B11	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS27.	1	0V
	PC		The light-detecting plate is not at PS27.	0	5V

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Sensor	Connector No. / I/O address	Checks		1/0	Voltage
PS28 Fixing/feeding unit releasing lever sensor	J509-B9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS28.	1	5V
	PC		The light-detecting plate is not at PS28.	0	0V
PS31 Front deck (left) lifter sensor	J518-A2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS31.	1	5V
	PC		The light-detecting plate is not at PS31.	0	0V
PS32 Front deck (left) paper sensor	J518-A5	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS32.	1	5V
	PC		The light-detecting plate is not at PS32.	0	0V
PS33 Front deck (left) open/closed sensor	J518-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS33.	1	5V
	PC		The light-detecting plate is not at PS33.	0	0V
PS34 Front deck (left) limit sensor	J518-A5	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS34.	1	5V
	PC		The light-detecting plate is not at PS34.	0	0V
PS35 Multifeeder detecting inlet sensor	J510-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS35.	1	5V
	PC		The light-detecting plate is not at PS35.	0	0V
PS37 Cassette 3 pickup sensor	J515-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS37.	—	5V
	——		The light-detecting plate is not at PS37.	—	0V
PS38 Cassette 3 lifter sensor	J515-A6	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS38.	1	5V
	PC		The light-detecting plate is not at PS38.	0	0V
PS39 Cassette 3 paper sensor	J515-A9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS39.	—	5V
	——		The light-detecting plate is not at PS39.	—	0V
PS40 Cassette 3 open/closed sensor	J515-B5	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS40.	1	5V
	PC		The light-detecting plate is not at PS40.	0	0V
PS41 Vertical path 3 sensor	J515-B8	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS41.	1	5V
	PC		The light-detecting plate is not at PS41.	0	0V
PS42 Cassette 4 pickup sensor	J517-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS42.	1	5V
	PC		The light-detecting plate is not at PS42.	0	0V
PS43 Cassette 4 lifter sensor	J518-A6	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS43.	1	5V
	PC		The light-detecting plate is not at PS43.	0	0V
PS44 Cassette 4 paper sensor	J517-A9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS44.	1	5V
	PC		The light-detecting plate is not at PS44.	0	0V

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Sensor	Connector No. / I/O address	Checks		1/0	Voltage
PS45 Cassette 4 open/closed sensor	J517-A9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS45.	1	5V
	PC		The light-detecting plate is not at PS45.	0	0V
PS46 Vertical path 4 sensor	J517-B8	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS46.	1	5V
	PC		The light-detecting plate is not at PS46.	0	0V
PS47 Pre-registration paper sensor	J502-B5	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS47.	1	5V
	PC		The light-detecting plate is not at PS47.	0	0V
PS48 Lower right cover open/closed sensor	J516-A2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS48.	1	5V
	PC		The light-detecting plate is not at PS48.	0	0V
PS49 Vertical path 2 sensor	J516-B9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS49.	1	5V
	PC		The light-detecting plate is not at 49.	0	0V
PS51 Deck (right) paper level middle sensor	J513-B9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS51.	1	5V
	PC		The light-detecting plate is not at PS51.	0	0V
PS52 Deck (right) paper level upper sensor	J513-B12	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS52.	—	5V
	——		The light-detecting plate is not at PS52.	—	0V
PS54 Deck (left) paper level middle sensor	J514-B9	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS54.	1	5V
	PC		The light-detecting plate is not at PS54.	0	0V
PS55 Deck (left) paper level upper sensor	J514-B12	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS55.	—	5V
	——		The light-detecting plate is not at PS55.	—	0V
PS56 Multifeeder cover open/closed sensor	J502-A2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS56.	1	5V
	PC		The light-detecting plate is not at PS56.	0	0V
PS58 Left center cover open/closed sensor	J502-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS58.	1	5V
	PC		The light-detecting plate is not at PS58.	0	0V
PS59 Toner cartridge cover open/closed sensor	J512-B2	While in standby, move the detecting lever by hand.	The light-detecting plate is at PS59.	1	5V
	PC		The light-detecting plate is not at PS59.	0	0V

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III . TROUBLESHOOTING IMAGE FAULTS

A. Making Initial Checks

1. Checking the Site

a. The power voltage must be as rated ±10 V. (Do not disconnect the power plug day and night.)
b. The copier must not be in a high-temperature/-humidity environment (i.e., near water faucets, water boilers, humidifiers) or a cold place. The copier must not be near a source of fire or is subjected to dust.
c. The copier must not be subjected to ammonium gas.
d. The copier must not be exposed to direct sunlight. If needed, provide curtains.
e. The copier must be in a well-ventilated place.
f. The copier must remain level.
g. The copier must remain powered throughout the night.
Check the site against the above conditions.

2. Checking the Originals

Find out whether the problem is due to originals or to the copier.
a. The copy density is normally at 5 ±1.
b. Reddish originals tend to produce copies with poor contrast.

Reference:

Red-colored sheets or slips tend to produce copies with poor contrast.

c. Check the density of the originals.

Reference:

Diazo copies used as originals or originals with a high transparency tend to produce copies which may be mistaken as being "foggy."
Originals prepared in pencil tend to produce copies which may be mistaken as being "too light."

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3. Copyboard Cover, Copyboard Glass, and Standard White Plate

Check the copyboard cover, copyboard glass, and standard white plate for dirt. If soiled, clean them with mild detergent solution or alcohol; if scratched, replace them.

4. Checking the Charging Assemblies

a. Check each charging assembly for dirt and the charging wire for a fault (scratches).
b. Clean the charging wire or the shielding plate of each charging assembly; if dirt cannot be removed, replace the part.
c. Check the type and the height of each charging wire.
d. Check to make sure that each charging assembly is correctly set.
e. Check the charging wire spring for rust.
f. Check the charging wire cleaning pad (of each charging assembly) for displacement.

5. Checking the Developing Assembly

a. Check to make sure that the rolls on both ends of the developing assembly are in contact with the drum.
b. Check the surface of the developing cylinder to make sure that there is an even coating of toner.

6. Checking Papers

a. Is the paper of a type recommended by Canon?
b. Is the paper moist? Try paper fresh out of package.

7. Checking the Periodically Replace Parts

Check the parts against the Scheduled Servicing Chart and the Table of Periodically Replaced Parts to find out if they have reached the end of life. Replace them as necessary.

8. Others

During the winter months, bringing in a copier from a cold to warm place can cause condensation inside it, leading to various problems.

Reference:

a. Condensation on the scanner (glass, mirror, lens) tends to produce darker images.
b. Condensation on the charging system tends to produce leakage.
c. Condensation on the pickup or feeding guide plate tends to produce feeding faults.

If condensation is noted, dry wipe the part or leave the copier alone for 60 min.

Caution:

If the copies have uneven density (between front and rear), is too light, or is foggy, make adjustments according to the Image Adjustment Basic Procedure before using the troubleshooting tables.

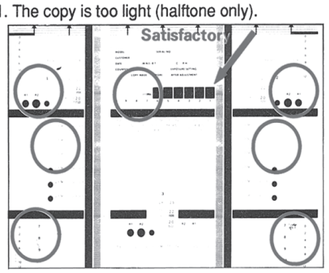
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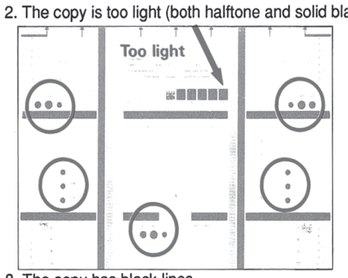
B. Samples of Image Faults

Note: The samples are made artificially to provide an idea of faulty copies, and may not represent actual faults.
(The NA-3 Test Sheet was copied in DIRECT mode on A4 paper, and reduced for printing.)

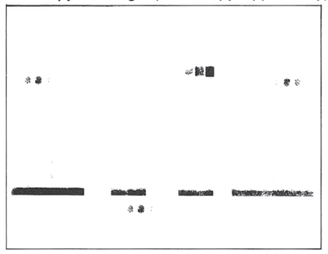
1. The copy is too light (halftone only).



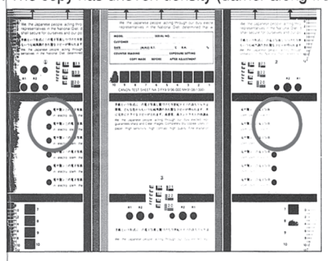
2. The copy is too light (both halftone and solid black).



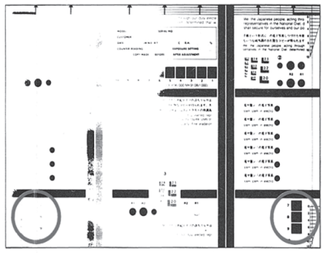
3. The copy is too light (entire copy, appreciably).



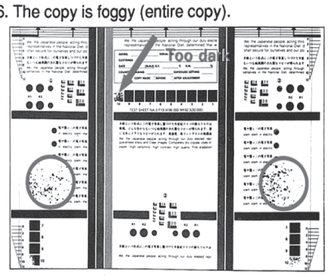
4. The copy has uneven density (darker along front).



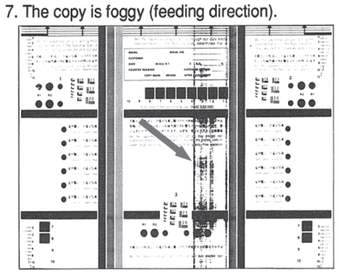
5. The copy has uneven density (lighter along front).



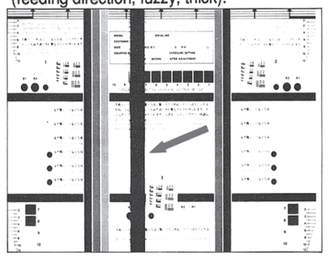
6. The copy is foggy (entire copy).



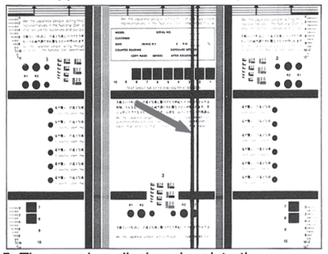
7. The copy is foggy (feeding direction).



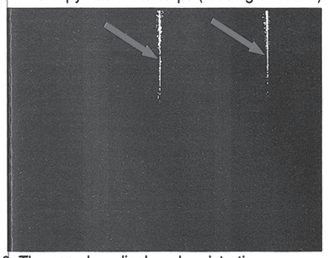
8. The copy has black lines (feeding direction, fuzzy, thick).



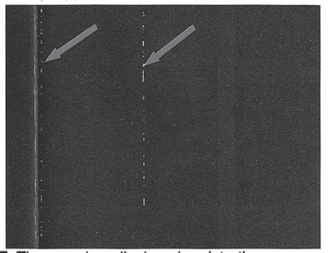
9. The copy has black lines (feeding direction, fine).



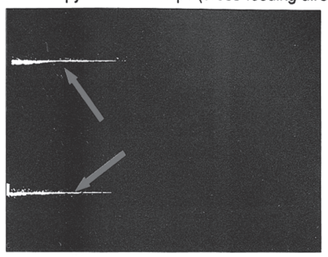
10. The copy has white strips (feeding direction).†



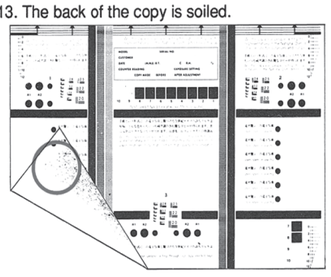
11. The copy has white lines (feeding direction).*



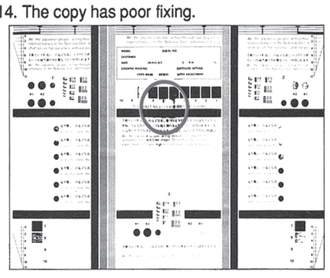
12. The copy has white strips (cross-feeding direction).



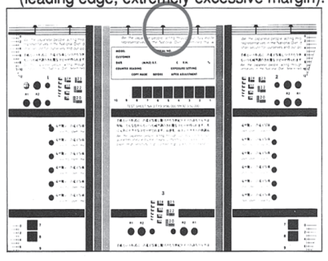
13. The back of the copy is soiled.



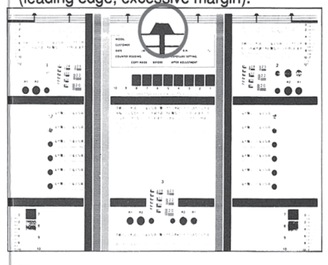
14. The copy has poor fixing.



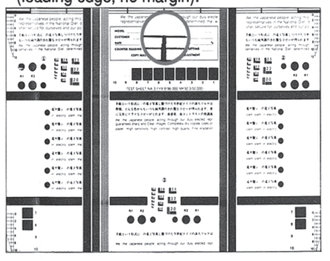
15. The copy has displaced registration (leading edge, extremely excessive margin).



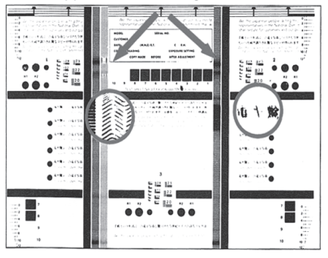
16. The copy has displaced registration (leading edge, excessive margin).



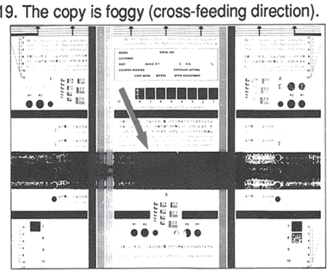
17. The copy has displaced registration (leading edge, no margin).



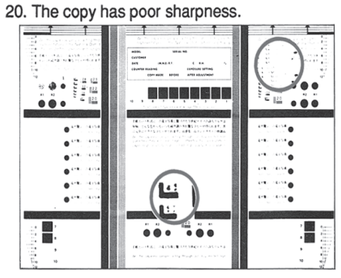
18. The copy has blurred images.



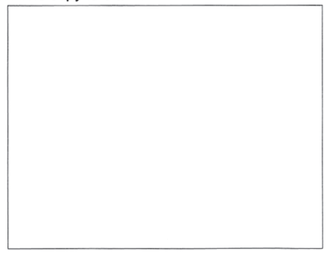
19. The copy is foggy (cross-feeding direction).



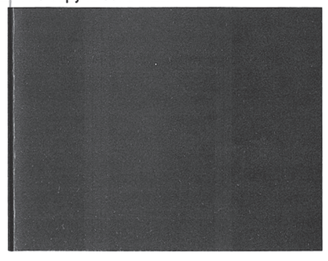
20. The copy has poor sharpness.



21. The copy is blank.



22. The copy is solid black.



* Copies made with the copyboard lifted; faults may also appear on normally made copies.
† Strips may vary in width.

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C. Troubleshooting Image Faults

1	The copy is too light (halftone area).

Cause	Step	Checks	Yes/No	Action
	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
Scanner (dirt)	2	Does the problem occur on copy images only?	YES	The cause is between the scanner and the CCD: 1. Check the standard white plate for dirt. 2. Execute COPIER>FUNCTION>CCD>CCD-ADJ in service mode.
AE adjustment	3	Make copies in AE mode. Is the density correct?	YES	End.
Developing assembly	4	Are the rolls of the developing assembly in contact with the drum?	NO	Check to see if the developing assembly pressure plate to see if it is mounted properly.
			YES	Is the toner on the developing cylinder in an even coating?

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2	**The copy is too light (solid black area).**
3	**The copy is too light (entire area, considerably).**

Cause		Step	Checks	Yes/No	Action
Copy paper		1	Try copy paper fresh out of package. Is the problem corrected?	YES	1. The paper may be moist. Instruct the user on the correct method of storing paper. 2. Inform the user that the use of paper not recommended by Canon may not produce the best results.
		2	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
		3	Turn off the power switch in the middle of copying operation, and open the front cover. At this time, is the toner image on the surface of the photosensitive drum before transfer normal?	NO	Go to step 8. (The cause is before transfer.)
Transfer faults		4	Is the transfer/separation charging assembly fitted securely?	NO	Fit the charging assembly securely.
		5	Set the following to '1' through '3': COPIER>OPTION>BODY>FUZZY in service mode. Is the problem corrected?	YES	End. (The cause is in the environment.)
				NO	Set FUZZY back to '1', and go to the next step.
Transfer fault	Transfer guide	6	Measure the resistance between the transfer guide and the plate (metal) of the feeding assembly. Is it 0 Ω?	YES	Check to make sure that the transfer guide is not in contact with a metal area of the feeding assembly (e.g., side plate).
	DC controller PCB			NO	Check the high-voltage transformer (HVT) and the DC controller PCB.
Developmentfault	Developing assembly (position)	7	Is the developing assembly fitted securely? Are the rolls of the developing assembly in firm contact with the photosensitive drum?	NO	Check the developing assembly pressure plate to see if it mounted correctly.
Pre-transfer charging assembly		8	Is the pre-transfer charging assembly fitted securely?	NO	Fit the charging assembly securely.

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Cause	Step	Checks	Yes/No	Action
Potential control, Photosensitive drum	9	Turn off and on the power switch. Check the setting of the following in service mode: VLIM and VDM of COPIER>DISPLAY>DPOT. Is it as follows? VLIM: between 62 and 82 VDM: between 432 and 452	NO	Check the power supply control system; if normal, replace the photosensitive drum.
Developing bias control			YES	Check the control system for the developing bias.

4	**The copy has uneven density (darker at front).**
5	**The copy has uneven density (lighter at front).**

Cause	Step	Checks	Yes/No	Action
	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
Developing assembly	2	Are the developing rolls of the developing assembly in firm contact with the photosensitive drum?	NO	Check the developing assembly locking unit.
Scanner (dirt)	3	Clean the scanning lamp, reflecting plate, side reflecting plate, mirror, lens, and dust-proofing glass. Is the problem corrected? Is the transfer/separation charging assembly fitted securely?	YES	End.
Pre-exposure lamp	4	Is the light of the pre-exposure lamp even during copying operation?	NO	1. Replace the pre-exposure lamp. 2. Replace the DC controller PCB.
Developing assembly	5	Is the toner on the developing cylinder in an even coating?	NO	1. Clean the edge of the blade of the developing assembly. (dry wiping) 2. Clean the surface of the developing cylinder. 3. Check to see if the toner inside the developing assembly is even.
Charging assembly, Copy paper			YES	1. Clean all charging wires once again, and check the position of the charging wires. 2. Try replacing copy paper. 3. Check the nip of the fixing roller.

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6 The copy is foggy (entire area).

Cause	Step	Checks	Yes/No	Action
	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
Scanner	2	Does the problem occur in copy images only?	YES	The cause is between the scanner and the CCD; check the following: 1. scanning lamp for dirt and end of life. 2. reflecting plate, mirror, lens, and standard white plate for dirt.
Potential control system	3	Set the following to '0' in service mode, and turn off the potential control: COPIER>OPTION>BODY>PC-CNT. Is the problem corrected?	YES	The cause is in the potential control system. Make checks according to II. "Standards and Adjustments" in Chapter 13.
Cleaner assembly	4	Is the cleaning blade mounted correctly?	NO	Mount the cleaning blade correctly.
Pre-exposure lamp, DC controller PCB	5	Is the pre-exposure lamp on during copying operation?	NO	1. Replace the pre-exposure lamp. 2. Replace the DC controller PCB.
Developing rolls	6	Are the developing rolls worn?	YES	Replace the developing rolls.
Developing cylinder			NO	Replace the developing cylinder.

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7	**The copy is foggy (vertical).**
8	**The copy has black lines (feeding direction, fuzzy, thick).**

Cause	Step	Checks	Yes/No	Action
Scanner (dirt)	1	Does the problem occur in copy images only?	YES	The cause is between the scanner and the CCD; check the following: 1. scanning lamp for dirt and end of life. 2. reflecting plate, mirror, lens, and standard white plate for dirt.
Potential control system	2	Set the setting of the following in service mode to '0', and turn off potential control: COPIER>OPTION>BODY>PC-CNT. Is the problem corrected?	YES	The cause is in the potential control system. Make checks as in II. "Standards and Adjustments" in Chapter 13.
Primary charging assembly	3	Clean the primary charging wire, grid wire, an shielding plate. Is the problem corrected? Is the light of the pre-exposure lamp even during copying operation?	YES	End.
Pre-exposure lamp	4	Clean the pre-exposure lamp. Is the problem corrected?	YES	End.
Fixing assembly Developing rolls	5	Using the door switch actuator, press the Copy Start key while keeping the front cover open. Turn off the power switch while copy paper is in the feeding assembly, and check the image. Is the copy image normal?	NO	The cause is after the fixing system. Check the fixing assembly upper and lower rolls for dirt.
Developing assembly	6	Is the toner on the developing cylinder in an even coating?	NO	Check the edge of the blade of the developing assembly.
Drum cleaner unit			YES	1. Remove the drum cleaner blade, and check the edge. 2. Check the drum cleaner unit.

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9 The copy has black lines (feeding direction,fine).

Cause	Step	Checks	Yes/No	Action
Scanner (dirt)	1	Does the problem occur in copy images only?	YES	The cause is between the scanner and the CCD: 1. Check the standard white plate and each mirror for dirt. 2. Execute COPIER>FUNCTION >CCD>CCD-ADJ in service mode.
Fixing system	2	Using the door switch actuator, press the Copy Start key while keeping the front cover open. Turn off the power switch while copy paper is in the feeding assembly, and check the image. Is the copy image normal?	YES	The cause is after the fixing system; check the following: 1. fixing assembly upper roller for scratches and black lines. 2. cleaning belt for dirt. 3. thermistor and separation claw for dirt, and reciprocating operation
Primary charging assembly (dirt)	3	Clean the primary charging assembly. Is the problem corrected?	YES	End.
Photosensitive drum cleaner assembly	4	Is there paper or foreign matter lodged on the cleaning blade of the cleaner assembly?	YES	Remove the foreign matter, and remove the cleaning blade and the cleaner assembly external covers.
	5	Are there scratches on the edge of the cleaning blade? (Feel the edge of the cleaning blade for scratches.)	YES	Reverse the edge. (If both edges are scratched, replace the blade.)
Photosensitive drum	6	Are there scratches or black lines in the peripheral direction of the photosensitive drum?	YES	Replace the photosensitive drum. If scratches are found, find out the cause.
Developing system			NO	Check the developing assembly.

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10	**The copy has white spots (vertical).**
11	**The copy has white lines (vertical).**

Cause	Step	Checks	Yes/No	Action
Copy paper	1	Try copy paper fresh out of package. Is the problem corrected?	YES	The copy paper may be moist. Instruct the user on the correct method of storing paper.
Dust-proofing glass	2	Clean the dust-proofing glass. Is the problem corrected?	YES	End.
Scanner (dirt)	3	Does the problem occur in copy images only?	YES	The cause is between the scanner and CCD: 1. Check the standard white plate for dirt. 2. Execute COPIER>FUNCTION >CCD>CCD-ADJ in service mode.
Photosensitive drum	4	Are there scratches in the peripheral direction of the photosensitive drum corresponding to the problem in the image?	YES	Find out the cause of the scratches; then, replace the photosensitive drum.
Developing assembly	5	Is the toner on the developing cylinder in an even coating?	NO	Check the edge of the blade of the developing assembly for paper lint or the like.
Fixing assembly	6	Using the door switch actuator, generate a test print PG-TYPE8 (solid black) while keeping the front cover open. Turn off the power switch immediately before copy paper enters the fixing assembly, and check the image. Is the image normal?	YES	The cause is after the fixing system; check the following: 1. fixing upper roller for offset.
Transfer/ separation charging assembly, Pre-transfer charging assembly	7	Clean the pre-transfer charging assembly and the transfer/separation charging assembly. Is the problem corrected?	YES	End.
			NO	Perform the following: 1. Change the setting of the following in service mode: COPIER>OPTION> BODY>TRNSG-SW. 2. Change the setting of the following in service mode: COPIER>OPTOIN> BODY>FUZZY.

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12 The copy has white spots (horizontal).

Cause	Step	Checks	Yes/No	Action
Developing assembly	1	Does the problem occur at intervals of about 52 mm?	YES	1. Clean the developing rolls. 2. Dry wipe the surface of the developing cylinder. 3. If scratches are found on the surface of the developing cylinder, replace the developing cylinder.
Drum	2	Does the problem occur at intervals of about 34 mm?	YES	1. Clean the drum. 2. If scratches are found on the drum, replace the drum.
Copy paper	3	Try paper fresh out of package. Is the problem corrected?	YES	The copy paper is moist. Instruct the user on the correct method of storing paper.
Scanner rail, Scanner cable	4	Does the problem occur in copy images only?	YES	1. Check the scanner rail for foreign matter. 2. Adjust the tension of the scanner cable.
Charging wire (dirt)	5	Are there scratches on the surface of the photosensitive drum?	NO	Clean the charging assembly.
Photosensitive drum			YES	Replace the photosensitive drum.

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13 The back of the copy is soiled

Cause	Step	Checks	Yes/No	Action
Transfer guide	1	Is the transfer guide soiled with toner?	YES	1. Clean the transfer guide. 2. Check the transfer guide bias. 3. Check the developing assembly for leakage of toner.
Drum cleaner	2	Is the paper feeding assembly soiled with toner?	YES	1. Clean the feeding assembly. 2. Check the drum cleaning assembly for leakage of waste toner.
Fixing assembly	3	Is the fixing assembly lower roller soiled?	YES	1. Clean the fixing assembly lower roller. 2. Clean the fixing assembly inlet guide. 3. Check the fixing upper roller and the cleaning belt.
			NO	Check the following: 1. registration roller for dirt. 2. delivery roller and separation claw for dirt.

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14 The copy has poor fixing.

Cause	Step	Checks	Yes/No	Action
Copy paper	1	Is the paper thick paper or otherwise paper with poor fixing performance?	YES	Set the following in service mode to '1': COPIER>OPTION> BODY>CPMKP-SW. Explain the following to the user: 1) Select the cassette with thick paper as the special cassette. 2) Select the icon of the selected cassette as the thick paper icon (2nd column from right, 3rd from the top): Thick paper icon:  3) Be sure to set all thick paper in the selected cassette in the future.
	2	Is the copy paper of a type recommended by Canon?	NO	Try recommended paper. If the results are good, ask the user to use recommended paper.
Fixing assembly	3	Does the problem occur vertically?	YES	Check the fixing assembly for scratches and dirt.
			NO	Check the nip of the fixing roller.

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15	**The copy has a displaced leading edge (appreciably excess margin).**
16	**The copy has a displaced leading edge (excess margin).**
17	**The copy has a displaced leading edge (no margin).**

Cause	Step	Checks	Yes/No	Action
Original	1	Is the original set properly?	NO	Set the original properly.
	2	Make copies using the following source of paper. Is the displacement different among copies? 1. Left/right front deck 2. Each cassette 3. Side paper deck 4. Duplexing feeding assembly	YES	Check the following for the source of paper suffering from leading edge displacement: 1. each roller for the end of life 2. each roller for soiling by paper lint 3. paper path for dirt
Registration clutch Registration roller	3	Make adjustments using the following in service mode: COPIER>ADJUST>FEED-ADJ>REGIST. Is the problem corrected?	NO	1. Check the registration roller for deformation. 2. Check the registration roller drive system.
			YES	End.

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18 The copy has a blurred image.

Cause	Step	Checks	Yes/No	Action
Scanner drive cable	1	Is the cable on the cable pulley overlapping while the scanner is moving? Further, is the cable too loose or too taut?	YES	1. Route the cable once again. 2. If the cable is twisted or frayed, replace it.
Scanner rail	2	Move the No. 1 mirror mount slowly by hand. Does the No. 1 mirror mount move smoothly?	NO	Clean the surface of the scanner rail with alcohol. Thereafter, apply a small amount of lubricant.
Photosensitive drum	3	Does the problem occur at intervals of about 34 cm?	YES	1. Check the drum gear. 2. Check the drum ends (where the developing rolls come into contact) for scratches and protrusions.
Drum drive gear	4	Does the problem occur at intervals of about 3 mm?	YES	Check the drum drive gear.
Developing gear	5	Does the problem occur at intervals of about 6 mm?	YES	Check the developing assembly.
Cleaner assembly gear	6	Does the problem occur at intervals of about 6 mm?	YES	Check the cleaner assembly.
Drum drive system			NO	Check the drum drive system.

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19 The copy is foggy (horizontal).

Cause	Step	Checks	Yes/No	Action
	1	Does the problem occur at the same position on all copies made in Direct?	YES	Go to step 3.
Scanning lamp, Lamp regulator	2	Does the scanning lamp flicker while the scanner is moving forward?	YES	Check the scanning lamp and the lamp regulator.
Scanner	3	Make reduced copies, and compare them against copies made in Direct. Are the positions of the problem different?	NO	Check the scanner system.
Feeding system			YES	Check the feeding system.

20 The copy has poor sharpness.

Cause	Step	Checks	Yes/No	Action
Copyboard glass	1	Is the copyboard glass soiled with oil?	YES	Clean the copyboard glass.
Mirror position	2	Is the horizontal reproduction ratio in Direct within the specified range?	NO	Adjust the distance between No. 1 mirror and the No. 2 mirror.
Scanner (dirt)	3	Clean the scanning lamp, reflecting plate, mirror, lens, and dust-proofing glass. Is the problem corrected?	YES	End.
Photosensitive drum	4	Replace the photosensitive drum. Is the problem corrected?	YES	End.
Lens drive assembly			NO	Check the operation of the lens drive assembly.

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21 The copy is blank.

Cause	Step	Checks	Yes/No	Action
Developing assembly	1	Is the developing assembly locked to the photosensitive drum during copying operation?	NO	Check the locking mechanism of the developing assembly.
Developing assembly drive mechanism	2	Is the developing assembly rotating during copying operation?	NO	Check the drive mechanism of the developing assembly.
Transfer charging assembly	3	Is the transfer charging assembly fully inserted?	NO	Insert it fully.
	4	Is leakage noted in the transfer charging assembly?	YES	Check the transfer charging assembly.
CCD unit Relay PCB	5	Is the voltage of the power to the CCD unit as rated?	NO	1. Check the relay PCB. 2. Check the path of power between the CCD unit and the relay PCB; if normal, replace the CCD unit.
Laser unit image processor PCB	6	Is the laser output normal?	NO	1. Replace the laser unit. 2. Replace the image processor PCB.
Drum unit			YES	Replace the drum unit.

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22 The copy is solid black.

Cause	Step	Checks	Yes/No	Action
Scanning lamp	1	Is the scanning lamp on?	NO	See "The scanning lamp fails to turn on."
Primary charging assembly	2	Select COPIER>DISPLAY>DPOT in service mode. Is the setting of VDM between 432 and 452?	NO	Check the primary charging assembly.
	3	Is the connection of the following normal? 1. Image processor PCB 2. CCD unit 3. DC control PCB 4. Relay PCB	NO	Correct the connection.
Image processor PCB	4	Does the problem occur in copy images only?	NO	1. Replace the image processor PCB. 2. Replace the DC controller PCB.
CCD unit			YES	Replace the CCD unit.

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IV . TROUBLESHOOTING MALFUNCTIONS

A. Troubleshooting Malfunctions

Caution:
When removing or mounting each sensor, be sure to pay attention to the orientation and position of the spring used to force the detecting lever.

1	E000

Cause	Step	Checks	Yes/No	Action
Thermistor	1	Clear E000, and turn off and then on the power switch. Select COPIER>DISPLAY >ANALOG. Does either FIX-C or FIX-E indicate a rise in temperature?	YES	The cause is the thermistor; check the following: • thermistor for mounting. • thermistor surface for dirt. • connection.
DC controller PCB	2	Turn off the power switch, and cool the upper fixing roller sufficiently; then, turn on the power switch. Clear E000, and turn off and then on the power switch, and select COPIER>I/O/ >IP in service mode. Is bit 4 and bit 5 of P012 '0' ?	YES	Replace the DC controller PCB.
Heater (open circuit)	3	Is electrical continuity of each heater normal?	NO	Replace the heater.
SSR			YES	Check the wiring; if normal, replace the SSR.

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2	E001

Cause	Step	Checks	Yes/No	Action
SSR (short circuit)	1	Keep the power switch off to cool the upper fixing roller sufficiently; during this time, check each thermistor for dirt on the surface, mounting, and connection. Turn on the power switch, and clear E001; then, turn off and then on the power switch. Select COPIER>DISPLAY>ANALOG in service mode. Are the readings of both FIX-C and FIX-E 200°C or higher?	YES	Replace the SSR.
Thermistor (TH1/TH2)	2	Replace the thermistor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

3	E002
4	E003

Cause	Step	Checks	Yes/No	Action
	1	Turn on the power switch, and clear E002/E003; then, turn off and then on the power switch. Is any of the following true? • The fixing heater fails to operate. • E002 or E003 is indicated.	YES	See the descriptions for the item in question.
	2	Is the contact of the connector on the DC controller PCB and the connectors inside the fixing assembly good? Further, is the wiring from the thermistor to the DC controller PCB good?	NO	Correct the connections.
Main thermistor (TH1; mounting)	3	Is the thermistor in even contact with the upper fixing roller?	NO	Mount the thermistor properly.
Main thermistor (TH1; dirt)	4	Clean the contact face of the thermistor. Is the problem corrected?	YES	End.
Main thermistor (TH; faulty)	5	Replace the thermistor. Is the problem corrected?	YES	End.
DC controller PBC	6	Replace the heater. Is the problem corrected?	YES	End.
			NO	Replace the DC controller PCB.

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5 E004

Cause	Step	Checks	Yes/No	Action
SSR	1	Replace the SSR. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

6 E005

Cause	Step	Checks	Yes/No	Action
Cleaning belt	1	Has the cleaning belt of the fixing assembly been taken up?	YES	Replace the cleaning belt with a new one.
Cleaning belt detecting lever	2	Is the position of the cleaning belt detection lever correct?	NO	Correct the position of the lever.
DC controller PCB	3	Is the cleaning belt sensor (PS7) normal? (See the instructions on how to check photointerrupters.)	YES	Replace the DC controller PCB.
Sensor			NO	Replace the sensor.

7 E010

Cause	Step	Checks	Yes/No	Action
	1	Is the connector of the main motor connected?	NO	Connect the connector.
DC controller PCB	2	Does the voltage between J514-B5 (+) and J514-B3 (-) on the DC controller PCB change from 0 to about 5 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Main motor (M1)			YES	Replace the main motor.

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8 E012

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the connectors (J601, J602) of the drum motor connected securely?	NO	Connect the connectors securely.
DC controller PCB	2	Measure the voltage of the connectors of the drum motor when the power switch is turned on. Is it as follows? • J602-2: 5 V • J602-3: 5 V	NO	Check the connection of the cable up to the DC controller PCB; if normal, replace the DC controller PCB.
Relay PCB	3	Measure the voltage of the connector of the drum motor when the power switch is turned on. Is it as follows? • J601-1: 38 V	NO	Check the connection of the cable up to the relay PCB; if normal, replace the relay PCB.
Drum motor (M0)			YES	Replace the drum motor.

9 E013

Cause	Step	Checks	Yes/No	Action
Waste toner feeding screw	1	Is the waste toner feeding screw drive gear pushing against the waste toner feeding screw lock detecting switch (MSW2)?	NO	It is most likely that the feeding screw inside the waste toner pipe is prevented from rotating for some reason. Remove the waste toner pipe, and try turning the screw by hand. If it can be turned easily, mount and check once again. Otherwise, replace the waste toner pipe, and remove the cause.
MSW2	2	Select COPIER>I/O>IP in service mode. Is bit 2 of P002 '1' ?	YES	Replace MSW2.
DC controller PCB			NO	Replace the DC controller PCB.

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10 E014

Cause	Step	Checks	Yes/No	Action
	1	Is the connector of the pickup motor connected?	NO	Connect the connector.
DC controller PCB	2	Does the voltage between J513-A3 (+) and J513-A1 (-) on the DC controller PCB change from 0 to about 5 V when the Copy start key is pressed?	NO	Replace the DC controller PCB.
Pickup motor (M2)			YES	Replace the pickup motor.

11 E015

Cause	Step	Checks	Yes/No	Action
	1	Is the connector of the pickup motor connected?	NO	Connect the connector.
DC controller PCB	2	Does the voltage between J513-A3 (+) and J513-A1 (-) on the DC controller PCB change from 0 to about 5 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Pickup motor (M2)			YES	Replace the pickup motor.

12 E019

Cause	Step	Checks	Yes/No	Action
Waste toner	1	Is the waste toner case full?	NO	Dispose of the waste toner.
Waste toner case mount	2	Is the movement of the waste toner mount smooth?	NO	Correct the movement.
Connect the connector	3	Is the connector (J514) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Waste toner case sensor	4	Replace the waste toner sensor (PS19). Is the problem corrected?	YES	Check the connection of the cable up to the DC controller PCB; if normal, replace the waste toner sensor (PS19).
DC controller PCB			NO	Replace the DC controller PCB.

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13 E020

Cause	Step	Checks	Yes/No	Action
Toner feed screw, Toner sensor (TS3)	1	Take out the developing assembly, and detach the upper cover of the developing assembly. Is there toner inside the developing assembly?	YES	Check the rotation of the toner feeding screw inside the developing assembly; if normal, replace the toner sensor (TS3).
	2	Select COPIER>FUNCTION>PART-CHK in service mode, and check the operation of the hopper drive clutch (CL1). Does the clutch operate?	NO	Check the connection; if normal, replace the clutch.
Hopper drive clutch (CL1)	3	Check the operation of the hopper motor (M18) using MTR. Does the motor operate?	NO	Check the connection; if normal, replace the motor.
			YES	Check the following: • magnet roller inside the hopper for rotation. • path from the hopper to the developing assembly for clogging by toner.

14 E025

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connector (J512) on the DC controller PCB connected securely?	YES	Connect the connector securely.
Drive system	2	Does the drive system of the toner feeding mechanism inside the cartridge operate smoothly?	NO	Correct the drive system.
Toner feeder motor (M6; inside cartridge)			YES	Replace the toner feeder motor inside the cartridge.

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15 E030

Cause	Step	Checks	Yes/No	Action
Total copy counter	1	Turn off the power switch, and disconnect J03 from the DC controller PCB. Set the meter range to × 1KW, and measure the resistance between J503-B12 and J503-B13. Is it about 500W?	NO	Check the wiring from the DC controller PCB to the total copy counter; if normal, replace the total copy counter.
Total copy counter	2	Connect J503 to the DC controller PCB, and turn on the power switch; then, set the meter range to 30 VDC. Does the voltage of J503-B13 on the DC controller change from about 24 to about 0 and then to about 24 V when the Copy Start key is pressed?	YES	Replace the total copy counter.
DC controller PCB			NO	Replace the DC controller PCB.

16 E031

Cause	Step	Checks	Yes/No	Action
Printer counter	1	Turn off the power switch, and disconnect J503 of the DC controller PCB. Set the meter range to × 1KW, and measure the resistance between J503-B14 and J503-B15. Is it about 500W?	NO	Check the wiring from the DC controller PCB to the total copy counter; if normal, replace the total copy counter.
Total copy counter	2	Connect J503 to the DC controller PCB, and turn on the power; then, set the meter to the 30 VDC range. Does the voltage of J503-B15 on the DC controller. Does it change from about 24 to about 0 and then to about 24 V when the Copy Start key is pressed?	YES	Replace the total copy counter.
DC controller PCB			NO	Replace the DC controller PCB.

17 E032

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the copy data controller or the NE controller connected securely?	NO	Connect the accessory securely.
DC controller PCB	2	Replace the copy data controller or the Remote Diagnostic Device II. Is the problem corrected?	NO	Replace the DC controller PCB.
Copy data controller, Remote Diagnostic Device II			YES	Correct the accessory.

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18 E043

Cause	Step	Checks	Yes/No	Action
Side deck driver PCB	1	Is there electrical continuity between the following connectors of the side deck driver PCB? Signal: 38VU — Connectors: J106-1 ◄► J101-1 Signal: 0VU — Connectors: J106-2 ◄► J101-2	NO	Replace the side deck driver PCB.
Deck main motor (M101)	2	Replace the deck main motor (M101) of the side paper deck. Is the problem corrected?	YES	End.
DC controller PCB			NO	Check the wiring from the DC controller PCB to the motor; if normal, replace the DC controller PCB.

19 E051

Cause	Step	Checks	Yes/No	Action
Horizontal registration home position sensor (PS18)	1	Is the horizontal home positions sensor (PS18) normal?	NO	Replace the sensor.
Horizontal registration motor (M15)	2	Disconnect J3603 of the no-stacking feed driver PCB. Is there electrical continuity between the following pins of the motor side? J3603-B4 and -B5 and -B3 J3603-B2 and -B6 and -B1	YES	Replace the horizontal registration motor (M15).
No-stacking feed driver PCB	3	Replace the no-stacking driver PCB. Is the problem corrected?	NO	End.
DC controller PCB				Replace the DC controller PCB.

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20 E060

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the connectors of the primary charging assembly connected securely?	NO	Connect the connectors securely.
Connector	2	Is the connector (J502) of the DC controller PBC connected securely?	NO	Connect it securely.
Primary charging wire cleaner home position detecting switch (MSW4)	3	Is the mounting of the primary charging cleaner home position detecting switch and the connection of the cable normal?	NO	If normal, replace the switch.
Primary charging wire cleaner motor (M8)	4	Replace the primary charging wire cleaner motor (M8). Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

21 E063

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the connectors of the transfer/ separation charging assembly connected securely?	NO	Connect the connectors securely.
Connector	2	Is the connector (J509) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Transfer/ separation charging wire cleaner home position detecting switch (MSW6)	3	Is the mounting of the transfer/separation charging wire cleaner home position detecting switch and the connection of the cable normal?	NO	If normal, replace the detecting switch.
Transfer/ separation charging wire cleaner motor (M9)	4	Replace the transfer/separation charging wire cleaner motor (M9). Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

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22 E065

Cause	Step	Checks	Yes/No	Action
Mounting	1	Is the primary charging assembly mounted securely?	NO	Mount the assembly securely.
Connector	2	Is the contact of the primary charging assembly free of dirt and fault?	NO	Correct the problem.
Wiring	3	Is the wiring from the HV-DC PCB to the primary charging assembly normal?	NO	Correct the wiring.
HV-DC PCB			YES	Replace the HV-DC PCB.

23 E066

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the connectors of the pre-transfer charging assembly connected securely?	NO	Connect the connectors securely.
Connector	2	Is the connector (J504) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Pre-transfer charging wire, Cleaning home position detecting switch (MSW3)	3	Is the mounting of the pre-transfer charging wire cleaner home position detecting switch and the connection of the cable normal?	NO	If normal, replace detecting switch.
Pre-transfer charging wire cleaner motor (M7)	4	Replace the pre-transfer charging wire cleaner motor (M7). Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

24 E067

Cause	Step	Checks	Yes/No	Action
Mounting	1	Are the primary charging assembly, pre-transfer charging assembly, and transfer/separating charging assembly mounted securely?	NO	Mount the assemblies securely.
Wiring	2	Is the wiring from the HV-DC PCB to each charging assembly and the connection from the HV-AC PCB to each charging assembly normal?	NO	Correct the wiring.
HV-AC PCB	3	Replace the HV-AC PCB. Is the problem corrected?	YES	End.
HV-DC PCB			NO	Replace the HV-DC PCB.

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25 E068

Cause	Step	Checks	Yes/No	Action
Mounting	1	Is the transfer/separation charging assembly mounted securely?	NO	Mount it securely.
Wiring	2	Is the connection of the wiring from the HV-AC PCB to the transfer/separation charging assembly (separation charging assembly side) normal?	NO	Correct the wiring.
HV-AC PCB	3	Replace the HV-AC PCB. Is the problem corrected?	YES	End.
HV-DC PCB			NO	Replace the HV-DC PCB.

26 E069

Cause	Step	Checks	Yes/No	Action
Mounting	1	Is the transfer/separation charging assembly mounted securely?	NO	Mount the assembly securely.
Wiring	2	Is the connection of the wiring from the HV-DC PCB to the transfer/separation charging assembly (transfer charging assembly side) normal?	NO	Correct the wiring.
Contact	3	Is the contact between the HV-DC PCB and the body normal?	NO	Connect the contact.
HV-DC PCB			YES	Replace the HV-DC PCB.

27 E100

Cause	Step	Checks	Yes/No	Action
BD PCB	1	Select COPIER>DISPLAY>DPOT in service mode. Is the reading of VLIM between 62 and 82?	YES	Check the connection of the BD PCB and the IP PCB and the position of the BD PCB; if normal, replace the BD PCB.
Laser output	2	Is the reading of VDM between 432 and 452?	YES	Check the following: • laser output • foreign matter in the laser path
Image processor PCB			NO	Replace the image processor PCB.

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28 E102

Cause	Step	Checks	Yes/No	Action
Relay PCB	1	Is the voltage of the following terminals on the relay PCB as indicated? J1714-1: 5 V J1714-3: 8 V J1714-5: -8 V	NO	Check the connection from the DC power supply PCB to the relay PCB; if normal, replace the relay PCB.
Laser unit	2	Is the connection from the relay PCB to the laser driver PCB normal?	YES	Replace the laser unit.
			NO	Correct the connection.

29 E110

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connector (J762) on the laser scanner motor driver PCB connected securely?	NO	Connect the connector securely.
Connector	2	Is the connector (J503) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Laser scanner motor (M4)	3	Replace the laser scanner motor (M4). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

30 E111

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the laser scanner fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J504) on the DC controller PCB connected correctly?	NO	Connect the connector securely.
Laser scanner fan (FM14)	3	Replace the laser scanner fan (FM14). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

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31 E121

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the laser driver cooling fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J503) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Laser driver cooling fan (FM5)	3	Replace the laser driver cooling fan (FM5). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

32 E202

Cause	Step	Checks	Yes/No	Action
	1	Is the scanner at the scanner home position when E202 turns on?	NO	See "The scanner fails to move forward."
Scanner home position sensor (PS1)	2	Is the scanner home position sensor (PS1) normal? (See the instructions on how to check photointerrupters.)	YES	Check the wiring from the DC controller PCB to the sensor; if normal, replace the sensor.
DC controller PCB	3		NO	Replace the DC controller PCB.

33 E204

Cause	Step	Checks	Yes/No	Action
	1	Does the scanner motor forward when the Copy Start key is pressed?	NO	See "The scanner fails to move forward."
Scanner image leading edge sensor (PS3) sensor	2	Is the scanner image leading edge sensor (PS3) normal? (See the instructions on how to check photointerrupters.)	YES	Check the wiring from the DC controller PCB to the sensor; if normal, replace the sensor.
DC controller PCB			NO	Replace the DC controller PCB.

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34	E211
35	E215

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connection of the connectors (J852, J853) on the light intensity control PCB secure?	NO	Connect the connector securely.
Fluorescent lamp heater	2	Replace the fluorescent lamp heater. Is the problem corrected?	YES	End.
Light intensity control PCB	3	Replace the light intensity control PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

36	E218

Cause	Step	Checks	Yes/No	Action
Fluorescent lamp	1	Is the fluorescent lamp mounted properly?	NO	Mount the lamp properly.
Connector	2	Are the connectors (J1002, J1003) on the inverter PCB connected securely?	NO	Connect the connectors securely.
Fluorescent lamp	3	Replace the fluorescent lamp. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

37	E219
38	E220
39	E222

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the connectors (J852, J853) on the light intensity control PCB connected securely?	NO	Connect the connectors securely.
Fluorescent lamp heater	2	Replace the fluorescent lamp heater. Is the problem corrected?	YES	End.
Light intensity control PCB	3	Replace the light intensity PCB. Is the problem corrected?	YES	End.
DC controller PBC			NO	Replace the DC controller PCB.

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40 E226

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the scanner cooling fan?	YES	Remove the foreign matter.
Connect	2	Is the connector (J504) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Scanner cooling fan (FM3)	3	Replace the scanner cooling fan (FM3). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

41 E240

Cause	Step	Checks	Yes/No	Action
DC controller PCB	1	Turn off and on the power switch. Is the problem corrected?	YES	End.
			NO	Replace the DC controller PCB.

42 E241

Cause	Step	Checks	Yes/No	Action
Original orientation PCB	1	Is the original orientation detection PCB mounted correctly?	NO	Mount the PCB correctly.
Original orientation detecting circuit	2	Replace the original orientation detection PCB. Is the problem corrected?	YES	End.
Image processor PCB			NO	Replace the image processor PCB.

43 E243

Cause	Step	Checks	Yes/No	Action
DC controller PCB	1	Turn off and then on the power switch. Is the problem corrected?	YES	End.
Control panel PCB	2	Replace the control panel PCB. Is the problem corrected?	NO	Replace the DC controller PCB.
			YES	End.

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44	E251

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the inverter cooling fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J507) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Inverter cooling fan (FM7)	3	Replace the inverter cooling fan (FM7). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

45	E302
46	E320

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connection of the connectors of the CCD PCB (J1502) and the image processor PCB (J1105) secure?	NO	Connect the connectors securely.
CCD PCB	2	Replace the CCD PCB. Is the problem corrected?	YES	End.
Image processor PCB			NO	Replace the image processor PCB.

47	E601

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connection of the connectors of the page memory PCB and the image processor PCB (J1110) secure?	NO	Connect the connectors securely.
Wiring	2	Are the connection and the cable between the MFC PCB (J1402, J1403) and the image processor PCB (J1102, J1103) normal?	NO	Correct the problem.
Page memory PCB	3	Replace the page memory PCB. Is the problem corrected?	YES	End.
Image server (HD)	4	Replace the image server (HD). Is the problem corrected?	YES	End.
Image processor PCB	5	Replace the image processor PCB. Is the problem corrected?	YES	End.
MFC PCB			NO	Replace the MFC PCB.

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48	E602

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connection and the cable between the image server (HD) and the MFC PCB (J1405, J1406) normal?	NO	Correct the problem.
Image server (HD)	2	Replace the image server (HD). Is the problem corrected?	YES	End.
MFC PCB			NO	Replace the MFC PCB.

49	E677

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the connection of the printer board (accessory) normal?	NO	Correct the problem.
Connector	2	Is the connection between the system motherboard and the MFC PCB normal?	NO	Correct the problem.
System mother- board	3	Replace the system motherboard. Is the problem corrected?	YES	End.
MFC PCB			NO	Replace the MFC PCB.

50	E710
51	E711

Cause	Step	Checks	Yes/No	Action
Malfunction	1	Turn off and then on the power switch. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

52	E712

Cause	Step	Checks	Yes/No	Action
Malfunction	1	Turn off and then on the power switch. Is the problem corrected?	YES	End.
Connector	2	Is the connector (J772) used to connect the ADF and the copier connected securely?	NO	Replace the DC controller PCB.
ADF controller PCB	3	Replace the ADF controller PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

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53 E713

Cause	Step	Checks	Yes/No	Action
Malfunction	1	Turn off and then on the power switch. Is the problem corrected?	YES	End.
Connector	2	Is the connector (J703) used to connect the finisher and the copier connected securely?	NO	Replace the DC controller PCB.
Finisher controller PCB	3	Replace the finisher controller PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

54 E717

Cause	Step	Checks	Yes/No	Action
Connector	1	Is the copy data controller or the Remote diagnostic device II connected securely?	NO	Connect the accessory securely.
Copy data controller, Remote diagnostic device II	2	Replace the copy data controller or the Remote diagnostic device II. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

55 E800

Cause	Step	Checks	Yes/No	Action
Malfunction	1	Turn off and then on the power switch. Is the problem corrected?	YES	End.
Relay connector (J24)	2	Is the relay connector (J24) of the power switch (SW1) connected securely?	NO	Connect the connector securely.
Power switch (SW1)	3	Set the meter range to × 1Ω, and disconnect the relay connector (J24); then, connect the probe to the connector on the power switch side. Is the resistance about 30Ω at this time?	NO	Replace the power switch (SW1).
DC controller PCB			YES	Check the wiring from the DC controller PCB to the power switch (SW1); if normal, replace the DC controller PCB.

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56 E804

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the power supply cooling fan (1/2)?	NO	Remove the foreign matter.
Connector	2	Is the connector (J505) on the DC controller PCB connected securely?	YES	Connect the connector securely.
Power cooling fan 1/2 (FM11/ FM12)	3	Replace the power cooling fan (1/2). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

57 E805

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the fixing heat discharge fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J503) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Fixing heat discharge fan (FM2)	3	Replace the fixing heat discharge fan (FM2). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

58 E820

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the drum fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J512) of the DC controller PBC connected securely?	NO	Connect the connector securely.
Drum fan (FM8)	3	Replace the drum fan (FM8). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

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59 E823

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the pre-transfer charging fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J504) on the DC controller PCB connected securely?	NO	Connect it securely.
Pre-transfer charging fan (FM10)	3	Replace the pre-transfer charging fan (FM10). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

60 E824

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign mater that hinders the rotation of the primary charging assembly fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J504) on the DC controller PCB connected securely?	NO	Connect the connector securely.
Primary charging assembly fan (FM1)	3	Replace the primary charging assembly fan (FM1). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

61 E830

Cause	Step	Checks	Yes/No	Action
Foreign matter	1	Is there foreign matter that hinders the rotation of the separation fan?	YES	Remove the foreign matter.
Connector	2	Is the connector (J509) on the DC control PCB connected securely?	NO	Connect the connector securely?
Separation fan (FM13)	3	Replace the separation fan (FM13). Is the problem corrected?	NO	End.
DC controller PCB			YES	Replace the DC controller PCB.

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62 AC power is absent.

Cause	Step	Checks	Yes/No	Action
Power plug	1	Is the power plug connected to the power outlet securely?	NO	Connect the power plug securely.
Main power supply	2	Is the rated AC voltage present at the power outlet?	NO	Inform the user that the problem is not of the copier's.
Leakage breaker	3	Remove the rear cover. Has the leakage breaker mounted on the power cord mount turned on (i.e., the switch is at ○).	NO	Remove the cause that turned on the leakage breaker, and shift its switch to |.
Power cord, Line filter (LF1)	4	Replace the power or and the line filter (LF1). Is there AC power?	YES	End.
			NO	Check the AC power line for wiring and the connectors for poor contact.
Power switch (SW1)	5	Connect the meter probes to both terminals of the power switch (SW1). Is the reading 0Ω when the switch is turned on and ∞ Ω when it is turned off?	NO	Replace the power switch.
Wiring			YES	Check the AC power line for wiring and the connector for poor contact.

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63 The DC power supply fails to operate 1.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Control panel power switch</td><td>1</td><td>Is the main power lamp on?</td><td>YES</td><td>See "The DC power supply fails to operate 2."</td></tr>
<tr><td>AC power supply</td><td>2</td><td>Is there the rated voltage between J28-1 and J28-5 and between J28-2 and J28-7 on the DC power supply PCB?</td><td>NO</td><td>See "AC power is absent 2."</td></tr>
<tr><td>Wiring</td><td>3</td><td>Is the connection of the cable for the connector (J1701-4 for overcurrent detection signal 1) on the relay PCB normal?</td><td>NO</td><td>Correct the connection.</td></tr>
<tr><td>Fuse (FU101)</td><td>4</td><td>Is the fuse (FU101) on the DC power supply PCB blown?</td><td>YES</td><td>Remove the cause that blew the fuse, and replace the fuse.</td></tr>
<tr><td>Wiring, DC load</td><td rowspan="2">5</td><td rowspan="2">Turn off the main power supply switch. When the power switch is turned on in about 3 min, is the voltage between the relay PCB and the following terminals normal?
<table><tr><th>Connector</th><th>pin No.</th><th>Output voltage</th><th>Remarks</th></tr><tr><td>J1704</td><td>1
3</td><td>12V
3.3V</td><td>±7%,-10%
±5%</td></tr><tr><td>J1705</td><td>1
3
5</td><td>+8V
-8V
15V</td><td>±10%
±10%
±10%</td></tr><tr><td>J1706</td><td>1</td><td>5V</td><td>±4%</td></tr></table>Note that the outputs in the table assume that the AC input power has a tolerance of ±10%.</td><td>YES</td><td>Turn off the power switch, and disconnect the following connectors from the relay PCB: J1711, J1712, J1714, J1716, J1718.
Connect one of the disconnected connectors, and turn on the power switch.
Repeat this for all connectors to find the connector that turns on the protection circuit; then, check the wiring from that connector and the DC loads.</td></tr>
<tr><td>DC power supply PCB</td><td>NO</td><td>Replace the DC power supply PCB.</td></tr>
</table>

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64 The DC power supply fails to operate 2.

Cause	Step	Checks	Yes/No	Action
	1	Is the main power lamp on?	NO	See "The DC power supply fails to operate 1."
Connector	2	Is the connection of the connectors of the following PCBs normal? • Relay PCB J1718 • DC controller PCB J501, J525 • MFC PCB J1402, J1403, J1407 • Image Processor PCB J1101, J1102, J1103	NO	Correct the connection.
			YES	End.
	3	Turn off the main power such. Is there DC power when the power switch is turned on in about 3 min and the control panel power switch is turned on?	NO	Replace the DC power supply PCB.

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65 Pickup operation fails.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td></td><td>1</td><td>Slide out and in the cassette. Is the sound of the lifter falling and the lifter motor turning heard?</td><td>NO</td><td>See "The lifter fails to move up."</td></tr>
<tr><td>Drive gear</td><td>2</td><td>Is the drive belt routed correctly?</td><td>NO</td><td>Route the belt correctly.</td></tr>
<tr><td>Upper right cover, Lower right cover</td><td>3</td><td>Are the upper right cover and the lower right cover closed firmly?</td><td>NO</td><td>Close the covers firmly.</td></tr>
<tr><td>Pressure cover</td><td>4</td><td>Are the upper right cover and the lower right cover forcing the vertical path rolls 1, 2, 3, and 4 in place?</td><td>NO</td><td>Check the pressure springs.</td></tr>
<tr><td>Vertical path 1 clutch (CL8), Vertical path 2 clutch (CL9), Vertical path 3 clutch (CL13), Vertical path 4 clutch (CL15), Pre-registration roller clutch (CL5)</td><td>5</td><td>Open the upper right cover and the lower right cover. Do the vertical path rollers 1, 2, 3, and 4 and the pre-registant roller rotate when power is put over the cover open/closed sensor and the Copy Start key is pressed?</td><td>NO</td><td>Check the wiring; if normal, replace the clutch(es).</td></tr>
<tr><td>Registration roller drive clutch</td><td>6</td><td>Is the leading edge of the copy paper as far as the registration roller assembly?</td><td>YES</td><td>See "the registration roller fails to rotate."</td></tr>
<tr><td>Pickup assembly</td><td>7</td><td>Open the upper right cover and the lower right cover. Does the feeding/separation roller rotate when a screwdriver is inserted into the door switch and the Copy Start key is pressed?</td><td>YES</td><td>Go to step 9.</td></tr>
<tr><td>Pickup clutch</td><td rowspan="2">8</td><td rowspan="2">Set the meter to the 30VDC range, and connect the probes to the connectors of the DC controller PCB as indicated in the following table. Does the voltage change from 24 to 0 V when the Copy Start key is pressed?
<table><tr><th>Cassette</th><th>Clutch</th><th>+</th><th>-</th></tr><tr><td>Right deck</td><td>CL10</td><td>J511-A1</td><td>GND</td></tr><tr><td>Left deck</td><td>CL11</td><td>J518-B7</td><td>GND</td></tr><tr><td>3</td><td>CL12</td><td>J515-A1</td><td>GND</td></tr><tr><td>4</td><td>CL14</td><td>J517-A1</td><td>GND</td></tr></table></td><td>YES</td><td>Check the wiring; if normal, replace the clutch in question.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
<tr><td>Sensor</td><td rowspan="2">9</td><td rowspan="2">Check which sensor has detected the jam in COPIER>I/O>IP in service mode. Is the sensor normal?</td><td>NO</td><td>Check the wiring and the lever; if normal, replace the sensor.</td></tr>
<tr><td>Pickup assembly</td><td>YES</td><td>Remove the pickup assembly, and check the spring.</td></tr>
</table>

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66 The lifter fails to move up.

Cause	Step	Checks	Yes/No	Action
Gear lever	1	Remove the deck, and move up the lifter by hand. Does it move smoothly?	NO	Remove the pickup assembly, and check the gear and the lever.
Spring lever	2	Push up the pickup roller releasing lever with your finger. Doe the pickup roller move down?	NO	Remove the pickup assembly, and check the spring and the lever.
Deck open/ closed sensor	3	Is the voltage of the following connectors on the DC controller PCB about 5 V when the deck is inserted? right deck (PS23): J511-B5 left deck (PS33): J518-B2	NO	Check the sensor flag and the wiring; if normal, replace the sensor.
Deck limit sensor	4	Is the voltage of the following connectors on the DC controller PCB about 0 V ? right deck (PS24): J511-B8 left deck (PS34): J518-B5	NO	Check the sensor flag and the wiring; if normal, replace the sensor.
Lifter motor	5	Turn on the main power switch and the control paper switch, and set the meter range to 30 VDC. Connect the - probe to the ground and the + probe to the connectors on the DC controller PCB. Does the voltage change from about 0 to 24 V? right deck (M13): J514-A4 left deck (M14): J514-B1	YES	Replace the deck lifter motor.
DC controller PCB			NO	Replace the DC controller PCB.

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67 The lifter fails to move up. (cassette pickup)

Cause	Step	Checks	Yes/No	Action
Cassette size detecting switch	1	Is the size of the cassette indicated on the message display?	NO	Check the cassette size detecting switch.
Latch (cassette)	2	Is the movement of the open button on the cassette normal?	NO	Mount the button properly.
Spring lever	3	Push down the pickup roller releasing lever with your finger. Does the pickup roller move down?	NO	Remove the pickup assembly, and check the spring and lever.
Cassette open/ closed sensor	4	Is the voltage of the following connectors on the DC controller PCB about 5 V when the cassette is slid in? cassette 3 (PS40): J515-B5 cassette 4 (PS45): J517-B5	NO	Check the sensor flag and the wiring; if normal, replace the sensor.
Lifter motor	5	Turn on the main power switch and the control panel power switch. Set the meter to the 30 VDC range, and connect the - probe to ground and the + probe to the following jacks. Does the voltage change from about 0 to 24 V when the cassette is slid in? cassette 3 (M16): J516-A4 cassette 4 (M17): J516-B1	YES	Remove the lifter motor assembly, and check the gears; if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

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68 Pickup operation fails. (multifeeder pickup)

Cause	Step	Checks	Yes/No	Action
Wiring	1	Is the connector of the multifeeder (to the body) connected properly?	NO	Connect the connector properly.
	2	Is the leading edge of the copy paper as far as the registration roller?	YES	See "The registration roller fails to rotate."
Pickup roller, Pickup/feeding roller, Separation roller	3	Are the pickup roller, pickup/feeding roller, and separation roller mounted in their correct orientation?	NO	Mount the roller(s) correctly?
Multifeeder paper sensor (PS17)	4	Execute the following service mode, and place paper in the multifeeder. Does the bit change from 0 to 1? bit 0 of COPIER>I/O>IP>POC1	NO	Check the wiring and the sensor flag; if normal, replace the sensor (PS17); i.e., DC controller PCB J510-B7, -B8, -B9.
Multifeeder feeding clutch (CL7)	5	Execute the following in service mode. Is the sound of the clutch (CL7) operating heard? COPIER>FUNCTION>PART-CHK>CL1	NO	Check the wiring; if normal, replace the clutch (CL7); i.e., DC controller PCB J513-A8, -A9.
Multifeeder feeding clutch (CL18)	6	Execute the following service mode. Is the sound of the clutch (CL18) operating heard? COPIER>FUNCTION>PART-CHK>CL16	NO	Check the wiring; if normal, replace the clutch (CL18); i.e., DC controller PCB J513-A6, A7.
Multifeeder pickup solenoid (SL6)	7	Execute the following service mode. Does the multifeeder pickup roller move up and down? COPIER>FUNCTION>PART-CHK>SL5 (up) COPIER>FUNCTION>PART-CHK>SL6 (down)	NO	Check the wiring and the link; if normal, replace the solenoid (SL6); i.e., DC controller PCB J510-10, -11, -12.
DC controller PCB	8	Replace the DC controller PCB. Is the problem corrected?	YES	End.

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69 The vertical path roller fails to rotate.

Cause	Step	Checks	Yes/No	Action
Belt, Gear, Coupling	1	Is the drive of the pickup motor (M2) transmitted to each vertical path roller through the belt, gear, and coupling?	NO	Mount the belt, gear, and coupling correctly.
Vertical path 1 clutch	2	Execute the following service mode. Is the sound of the clutch (CL8) operating heard? COPIER>FUNCTION>PART-CHK>CL7	NO	Check the wiring; if normal, replace the clutch (CL8); i.e., DC controller PCB J511-A3, -A4.
Vertical path 2 clutch	3	Execute the following service mode. Is the sound of the clutch (CL9) operating heard? COPIER>FUNCTION>PART-CHK>CL9	NO	Check the wiring; if normal, replace the clutch (CL9); i.e., DC controller PCB J514-A6, -A7.
Vertical path 3 clutch	4	Execute the following service mode. Is the sound of the clutch (CL13) operating heard? COPIER>FUNCTION>PART-CHK>CL3	NO	Check the wiring; if normal, replace the clutch (CL13); i.e., DC controller PCB J515-A3, -A4.
Vertical path 4 clutch	5	Execute the following service mode. Is the sound of the clutch (CL15) operating heard? COPIER>FUNCTION>PART-CHK>CL5	NO	Check the wiring; if normal, replace the clutch (CL15); i.e., DC controller PCB J517-A3, -A4.
DC controller PCB			YES	Replace the DC controller PCB.

70 The registration roller fails to rotate.

Cause	Step	Checks	Yes/No	Action
Belt, Gear, Coupling	1	Is the drive from the main motor (M1) transmitted to the registration roller through the belt, gear, and coupling?	NO	Mount the belt, gear, and coupling correctly.
Registration paper sensor (PS5)	2	Execute the following service mode. When paper is placed over the registration paper sensor, does the bit change from '0' to '1'? bit 1 of COPIER>I/O>IP>P001	NO	Check the wiring and the sensor flag; if normal, replace the sensor (PS5); i.e., DC controller PCB J509-A1, -A2, -A3.
Registration clutch (CL2)	3	Execute the following service mode. Is the sound of the clutch (CL2) operation heard? COPIER>FUNCTION>PART-CHK>CL19	NO	Check the wiring; if normal, replace the clutch (CL2); i.e., DC controller PCB J509-A4, -A5.
DC controller PCB			YES	Replace the DC controller PCB

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71 The No. 1 mirror fails to operate.

Cause	Step	Checks	Yes/No	Action
Copyboard glass	1	Is the copyboard glass mounted correctly?	NO	Mount the copyboard so that it turns on the copyboard glass sensor (PS57) correctly.
Copyboard glass sensor (PS57)	2	Measure the voltage of J804-2 on the scanner motor driver PCB. • Is it 5 V when the copyboard glass is mounted? • Is it 0 V when the copyboard glass is removed?	NO	If the voltage does not change when the sensor is pressed by hand and the wiring is free of a problem, replace the sensor.
Cable	3	Is the scanner drive cable routed correctly?	NO	Route the cable correctly.
Scanner path	4	Is the scanner rail free of dirt, and does the scanner move smoothly when pushed by hand?	NO	Check the rail for dirt and foreign matter; as necessary, clean, lubricate, or correct. **Reference:** If the rail is soiled, clean it with alcohol, and apply a small amount of silicone oil (FY9-6010).
Relay PCB	5	Measure the voltage of J801 on the scanner motor driver PCB. Is it as indicated? J801-1: 38 V J801-3: 12 V J801-5: -12 V J801-6: 5 V	NO	Check the AC line up to the relay PCB; if normal, replace the relay PCB.
DC controller PCB	6	Measure the voltage of J506-A12 on the DC controller PCB. Does it change from 0 to 5 V when the control panel power switch is turned on?	NO	Check the wiring; if normal, replace the DC controller PCB.
Scanner motor driver PCB	7	Replace the scanner motor driver PCB. Is the problem corrected?	YES	End.
Scanner motor (M5)			NO	Replace the scanner motor (M5).

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72 The pre-exposure lamp fails to turn on.

Cause	Step	Checks	Yes/No	Action
Pre-exposure lamp PCB	1	Select COPIER>1/O>IP in service mode. Does bit 6 of address P017 change from '0' to '1' when the Copy Start key is pressed?	YES	Check the wiring from the DC controller PCB to the pre-exposure lamp PCB; if normal, replace the pre-exposure lamp PCB.
DC controller PCB	2	Set the meter to the 30 VDC range. Does the voltage between J504-A1 (+) on the DC controller PCB and GND change from 0 to 24 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Pre-exposure lamp PCB			YES	Check the wiring from the DC controller PCB to the pre-exposure lamp PCB; if normal, replace the pre-exposure lamp PCB.

73 The scanning lamp fails to turn on.

Cause	Step	Checks	Yes/No	Action
Connector	1	Select COPIER>FUNCTION>MISC-R>SCANLAMP in service mode. Does the scanning lamp remain on for 3 sec when the OK key is pressed?	YES	Check the connector. It may have poor contact.
Lamp	2	Is the scanning lamp (LA1) mounted correctly?	NO	Disconnect the power plug, and mount the lamp correctly.
Relay PCB	3	Measure the voltage of J1001-1 on the inverter PCB. Is it 38 V?	NO	Check the AC line up to the relay PCB; if normal, replace the relay PCB.
Inverter PCB	4	Measure the voltage of J506-B11 on the DC controller PCB. Does it change from 5 to 0 V when the control panel power switch is turned on?	YES	Check the wring; if normal, replace the inverter PCB.
DC controller PCB			NO	Check the wiring; if normal, replace the DC controller PCB.

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74 The cartridge inside toner feeder motor (M6) fails to operate.

Cause	Step	Checks	Yes/No	Action
	1	Execute COPIER>FUNCTION>PART-CHK>MTR in service mode. Does the cartridge inside toner feeder motor rotate?	NO	Go to step 3.
DC controller PCB	2	Execute COPIER>FUNCTION>PART-CHK>MTR in service mode to operate the hopper motor. Is the voltage between J512-B4 (+) and J512-B5 (-) on the DC controller PCB 24 V?	NO	Replace the DC controller PCB.
J243, 245			YES	Check the connection of the relay connectors J243 and J245.

75 The hopper inside toner feeder motor (M18) fails to operate.

Cause	Step	Checks	Yes/No	Action
	1	Execute COPIER>FUNCTION>PART-CHK>MTR in service mode. Does the hopper inside toner feeder motor rotate?	NO	Go to step 3.
DC controller PCB	2	Execute COPIER>FUNCTION>PART-CHK>MTR in service mode to operate the hopper inside toner feeder motor. Is the voltage between J504-B18 (+) and J504-B19 (-) on the DC controller PCB about 24 V?	NO	Replace the DC controller PCB.
J138, 143			YES	Check the connection of the relay connectors J138 and J143.

76 The drum heater fails to operate.

Cause	Step	Checks	Yes/No	Action
	1	Open the front door, and release the fixing/feeding assembly. Are the ends of the drum warm? (Do not touch the surface of the drum.)	YES	The drum heater is normal.
DC controller PCB	2	Set the meter range to 12 VDC, and connect the probes to J505-A8 (+) and J505-A7 (-) on the DC controller PCB. Is the voltage between the terminals 5 V during standby?	NO	Replace the DC controller PCB.
Heater driver PCB	3	Replace the heater driver PCB. Is the problem corrected?	YES	End.
Drum heater (H3)	4	Remove the drum, and set the meter range to 'Ω × 1'. Does the index of the meter swing when ht probes are connected to both terminals?	NO	Replace the drum heater.
Drum heater controller PCB			YES	Replace the drum heater controller PCB.

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77 The Add Toner indicator fails to turn on.

Cause	Step	Checks	Yes/No	Action
	1	Is there toner inside the hopper?	YES	Go to step 2.
Toner sensor (hopper), DC controller PCB	2	Select COPIER>I/O>IP in service mode. Move toner away from the toner sensor (TS1) to exposure the sensor. At this time, is bit 9 of P002 '0' (toner absent)?	NO	1. Replace the sensor. 2. Replace the DC controller PCB.
DC controller PCB, Control panel			YES	1. Replace the DC controller PCB. 2. Replace the control panel.

78 The Add Toner fails to turn on.

Cause	Step	Checks	Yes/No	Action
Toner	1	Is there toner at the rear of the hopper?	NO	The toner inside the hopper is not enough. Supply toner.
Toner sensor (TS1)	2	Select COPIER>I/O>IP in service mode. At this time, is bit 9 of P002 '0' (toner absent)?	YES	1. Replace the toner sensor inside the hopper.
DC controller PCB Control panel			NO	1. Replace the DC controller PCB. 2. Replace the control panel.

79 The Control Card Set message fails to turn on.

Cause	Step	Checks	Yes/No	Action
CC-V	1	Can copies be made without a control card?	YES	Check the connector of the CC-V for a short circuit.
Control panel	2	Replace the control panel. Does the message turn on?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

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80 The Control Card Set message fails to turn off.

Cause	Step	Checks	Yes/No	Action
Control card	1	Is the control card inserted correctly?	NO	Insert the control card correctly.
DC controller PCB	2	Can copies be made?	NO	Replace the DC controller PCB.
CC-V			YES	Replace the CC-V.

81 The Add Paper message fails to turn off. (deck right/left)

Cause	Step	Checks	Yes/No	Action
Deck paper sensor (PS22 for right; PS32 for left)	1	Is the deck paper sensor mounted correctly, and is the movement of the sensor flag normal?	NO	Mount the sensor and the flag properly.

82 The Add Paper message fails to turn off. (cassette 3/4)

Cause	Step	Checks	Yes/No	Action
Cassette paper sensor (PS39 for 3; PS44 for 4)	1	Is the cassette paper sensor mounted correctly, and is the movement of the sensor flag normal?	NO	Mount the sensor and the flag properly.
Cassette pickup assembly	2	Is the output gear of the lifter motor and the gear of the cassette pickup motor poorly engaged?	YES	Mount the lifter motor properly. Or, replace the lifter motor and the cassette pickup assembly simultaneously.

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83 The fixing heater fails to operate.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Multifeeder cover</td><td>1</td><td>Is the multifeeder cover closed firmly?</td><td>NO</td><td>Close the multifeeder cover firmly.</td></tr>
<tr><td rowspan="2">Multifeeder cover open/ closed sensor (PS56)</td><td rowspan="2">2</td><td rowspan="2">Is the multifeeder cover open/closed sensor mounted properly?</td><td>NO</td><td>Mount the sensor properly.</td></tr>
<tr><td>YES</td><td>Replace the multifeeder open/ closed sensor.</td></tr>
<tr><td rowspan="2">Fixing/feeding unit releasing lever sensor (PS28)</td><td rowspan="2">3</td><td rowspan="2">Is the fixing/feeding unit releasing lever sensor mounted properly?</td><td>NO</td><td>Mount the sensor properly.</td></tr>
<tr><td>YES</td><td>Replace the fixing/ feeding unit releasing lever sensor.</td></tr>
<tr><td>Thermal switch (TP1)</td><td>4</td><td>Slide out the fixing assembly, and connect the meter probes to both terminals of the thermal switch (TP1). Is there electrical continuity?</td><td>NO</td><td>Replace the thermal switch.</td></tr>
<tr><td>Relay (RLY1)</td><td>5</td><td>Replace the relay (RLY1). Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>Fixing heater (H1, H2)</td><td>6</td><td>Slide out the fixing assembly, and connect the meter probes to both terminals of the fixing heater (H1, H2). Is there electrical continuity?</td><td>NO</td><td>Replace the fixing heater.</td></tr>
<tr><td>SSR</td><td rowspan="2">7</td><td rowspan="2">Is the voltage of the connector on the DC controller PCB about 5 V?
<table><tr><th>Heater</th><th>+</th></tr><tr><td>Main heater (H1)</td><td>J505-A10</td></tr><tr><td>Main heater (H2)</td><td>J505-A11</td></tr></table></td><td>YES</td><td>Replace the SSR.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
</table>

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84 Pickup operation fails. (side paper deck)

Cause	Step	Checks	Yes/No	Action
Upper right door, Lower right door	1	Are the upper right door and the lower right door closed firmly?	NO	Close the doors firmly.
Lifter	2	Slide out the compartment from the deck. Does the lifter move down? Further, is the lifter heard to move up when the compartment is slid in?	NO	See the "The lifter fails to move up."
Deck pickup roller	3	Does the pickup roller rotate?	YES	If the roller is soiled, clean it with alcohol; if it is deformed by wear, replace it.
Belt	4	Is the belt used to transmit the drive to the pickup roller routed correctly?	NO	Route the belt correctly.
Drive belt, Gear, Coupling	5	Is the drive from the deck main motor transmitted to the pickup assembly through the drive belt, gear, and coupling?	NO	Check the drive belt, gear, and coupling.
Side deck driver PCB	6	Measure the voltage of the connector on the side deck PCB. Does it change from 24 to 0 V when the Copy Start key is pressed? J104-7: CL101 J104-12: CL102	NO	Replace the side paper deck PCB.
Deck pickup/ vertical path clutch (CL102 for pickup; CL101 for feeding)			YES	Check the wiring up to the clutch; if normal, replace the clutch.

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85 The deck lifter fails to move up. (side paper deck)

Cause	Step	Checks	Yes/No	Action
Side paper deck	1	Is the deck installed correctly?	NO	Install the deck correctly.
Lifter cable	2	Is the lifter cable routed correctly?	NO	Route the cable correctly.
Spring, Lever	3	Push up the pickup roller releasing lever by your finger. Does the pickup roller move down?	NO	Remove the pickup assembly, and check the spring and the lever.
Deck lifter motor (M102)	4	Does the deck lifter motor rotate?	YES	Go to step 6.
Side deck driver PCB	5	Does the voltage between J109-3 on the side deck driver PCB and GND (-) change from about 0 to 5 V when the deck is closed?	NO	Replace the side deck driver PCB.
Deck open detecting switch (SW101)			YES	Check the wiring to the switch; if normal, replace the switch.
Deck lifter lower limit detecting switch (SW102)	6	Does the voltage between J107-8 (+) on the side deck driver PCB and GND (-) change as follows? • when the deck is opened, 0 V. • when the deck is closed, 5 V.	YES	Check the lever and the wiring; if normal, replace the sensor.
Side deck driver PCB			NO	Replace the side deck driver PCB.

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V . TROUBLESHOOTING FEEDING PROBLEMS

A. Copy Paper Jams

Jams tend to be limited to the following blocks of the copier:

[1] Pickup assembly
[2] Separation/feeding assembly
[3] Fixing/delivery assembly
[4] Drum cleaner unit
[5] Reversing assembly
[6] Duplexing feeding assembly

The troubleshooting procedures that follow are organized according to location.

The copier is designed to indicate the location and type of each jam in its service mode (COPIER>DISPLAY>JAM).

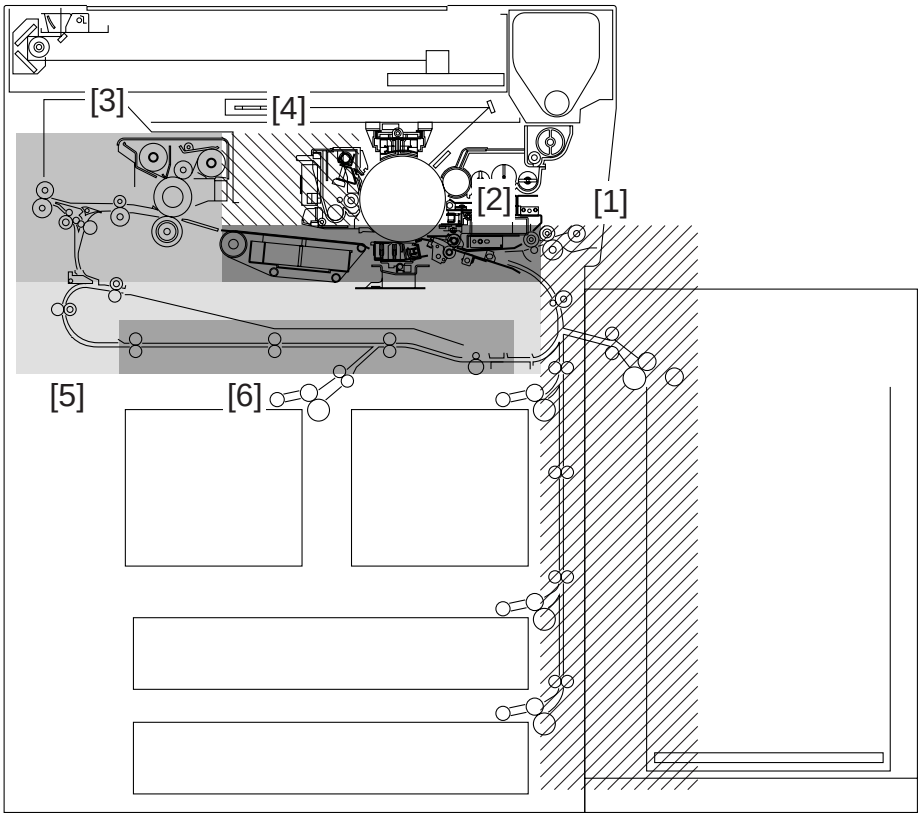


Figure 13-501

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1 Pickup Assembly

Cause	Step	Checks	Yes/No	Action
Pickup assembly	1	Is the copy paper curled or wavy?	YES	Replace the paper; instruct the user on the correct method of storing paper.
	2	Try paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
DC controller PCB, Pickup clutch	3	Does the pickup roller of the selected cassette, deck, or manual feed tray rotate during copying operation?	NO	See "Pickup operation fails" for each source of paper.
Pickup roller	4	Is the pickup roller deformed or worn?	YES	Replace the pickup roller.
Guide plate			NO	Check the guide plate for deformation.

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2 Separation/Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Copy paper	1	Is the leading edge of copy paper past the registration roller?	YES	Go to step 5.
Registration roller	2	Is the coupling of the registration roller connected properly?	NO	Mount the fixing/ feeding unit properly.
	3	Is the registration roller deformed (worn) or soiled?	YES	If soiled, clean the roller with alcohol; if worn, replace it.
	4	Are the roller retaining springs on both ends of the registration roller mounted correctly?	NO	Mount them correctly.
			YES	Check the transfer guide for foreign matter and deformation.
Registration clutch	5	Does the registration clutch operate normally?	NO	Check the registration clutch.
Transfer/ separation charging assembly	6	Is the transfer/separation charging assembly set securely?	YES	Check the transfer/ separation charging assembly.
	7	Are there burrs on the paper guide of the transfer/separation charging assembly?	YES	Remove the burrs.
Copy paper	8	Use paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
Separation claw (cleaner unit)	9	Is the separation claw under the cleaner unit damaged?	YES	Replace the separation claws.
Feeding belt	10	Are the two feeding belts moving properly?	NO	Check the belt and the pulley.
Feeding fan			YES	Check to make sure that the feeding fan is operating.

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3 Fixing/Delivery Assembly

Cause		Step	Checks	Yes/No	Action
Separation claw (delivery assembly)		1	Is the separation claw worn or deformed?	YES	1. Replace the separation claw. 2. If dirt is found, clean it with solvent.
Fixing assembly	Upper/lower roller	2	Is the upper/lower roller deformed or scratched?	YES	Replace the roller.
	Paper guide	3	Is the paper guide soiled with toner?	YES	Clean the guide with solvent.
		4	Is the height of the paper guide normal?	NO	Adjust the height.
	Nip	5	Is the lower roller pressure (nip) as indicated?	NO	Adjust the pressure.
Delivery assembly	Cleaning belt	6	Is the cleaning belt taken up normally?	NO	Check the fixing cleaner unit.
	Sensor lever	7	Does each sensor lever move smoothly?	NO	Adjust the lever.
	Delivery sensor	8	Are the external delivery sensor (PS10) and the claw jam sensor (PS6) normal?	NO	Replace the sensor.
	Delivery paper deflecting plate	9	Is the delivery paper deflecting plate oriented in the direction of delivery?	NO	Correct the orientation of the delivery paper deflecting plate.
	Delivery roller drive assembly	10	Does the delivery roller move smoothly?	NO	Check the drive assembly of the delivery roller.
Leading edge margin				YES	Check the leading edge of copy paper for a margin.

4 Fixing/Delivery Assembly (reversal delivery assembly)

Cause	Step	Checks	Yes/No	Action
Duplexing reversal sensor (PS12)	1	Is the duplexing reversal sensor (PS12) normal?	NO	Replace the sensor.
Internal delivery paper sensor (PS9)	2	Is the internal delivery paper sensor (PS9) normal?	NO	Replace the sensor.
Delivery flapper solenoid (SL3)	3	Does the delivery flapper move correctly?	NO	Adjust the position of the delivery flapper solenoid or replace it.
Reversing flapper solenoid (SL11)	4	Does the reversing flapper move correctly?	NO	Adjust the position of the reversal flapper solenoid or replace it.
Reversal motor (M11)	5	Does the reversal motor (M11) rotate at the correct timing?	NO	Replace the reversal motor.

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5 Cleaner Unit

Cause	Step	Checks	Yes/No	Action
Transfer/ separation charging assembly, Pre-transfer charging assembly	1	Is the transfer/separation charging assembly and the pre-transfer charging assembly fitted securely?	NO	Fit the transfer/ separation charging assembly securely.
Separation claw (cleaner unit)	2	Is the height of the charging wire as indicated?	NO	Adjust the height of the charging wire.
Copy paper	3	Is the separation claw under the cleaner unit damaged?	YES	Replace the separation claw.
High-voltage transformer, DC controller PCB	4	Try paper of a type recommended by Canon.	YES	Advise the user to use recommended paper.
			NO	1. Check the high-voltage transformer. 2. Check the DC controller PCB.

6 Lower Feeding Assembly

Cause	Step	Checks	Yes/No	Action
	1	Is the lower feeding assembly set correctly?	NO	Set the assembly correctly.
Lower feeding middle clutch (CL16), Lower feeding right clutch (CL17)	2	Is the roller inside the lower feeding assembly rotating?	NO	Replace CL16 or CL17.
Pre-confluence sensor (PS14), Post-confluence sensor (PS15)	3	Are the pre-confluence sensor (PS14) and the post-confluence sensor (PS15) normal?	NO	Replace PS14 or PS15.

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B. Faulty Feeding

1 Double Feeding

Cause	Step	Checks	Yes/No	Action
Separation roller	1	Is the separation roller deformed or worn?	YES	Replace the separation roller.
Spring			NO	Replace the spring used to pull the separation roller.

2 Wrinkles

Cause		Step	Checks	Yes/No	Action
Pickup assembly		1	Turn off the power while copy paper is moving through the feeding assembly. At this time, is the copy paper wrinkled? Or is it moving askew?	YES	Check the pickup assembly. Check the registration roller.
Copy paper		2	Try paper fresh out of package. Is the problem corrected?	YES	The paper may be moist. Advise the user on the correct method of storing paper.
		3	Try paper recommended by Canon. Is the problem corrected?	NO	Advise the user to use recommended paper.
Fixing assembly	Paper guide	4	Is the paper guide soiled with toner or foreign matter?	YES	Clean it with solvent.
		5	Is the height of the paper guide appropriate?	NO	Adjust the height.
	Lower roller pressure	6	Is the lower roller pressure (nip) as indicated?	NO	Adjust the pressure.
	Upper/ lower roller pressure			YES	Try replacing the upper and lower rollers one after the other.

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VI . ARRANGEMENT AND FUNCTIONS OF PARTS

A. Clutches

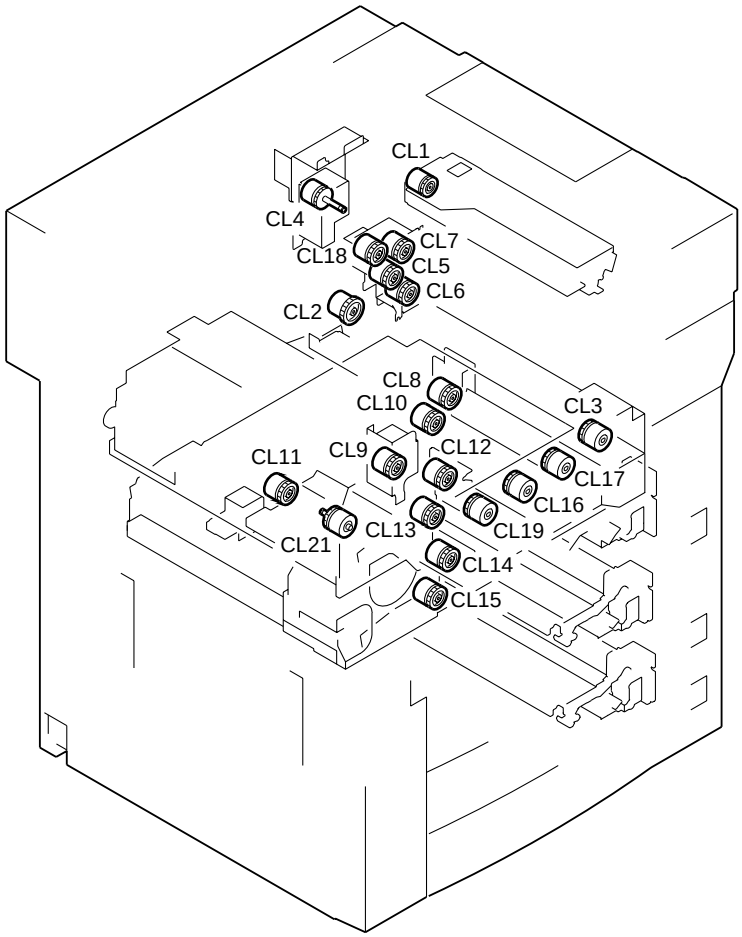
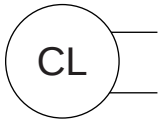


Figure 13-601

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Clutches

Symbol	Name	Notation	Description
	Clutch	CL1	Drives the hopper.
		CL2	Drives the registration roller.
		CL3	Drives the registration roller brake.
		CL4	Drives the developing cylinder.
		CL5	Drives the pre-registration roller.
		CL6	Drives the pre-registration roller brake.
		CL7	Drives the manual feed tray pickup roller.
		CL8	Drives the vertical path 1 roller.
		CL9	Drives the vertical path 2 roller.
		CL10	Drives the front deck (right) pickup roller.
		CL11	Drives the front deck (left) pickup roller.
		CL12	Drives the cassette 3 pickup roller.
		CL13	Drives the vertical path 3 roller.
		CL14	Drives the cassette 4 pickup roller.
		CL15	Drives the vertical path 4 roller.
		CL16	Drives the lower feeding middle roller.
		CL17	Drives the lower feeding right roller.
		CL18	Drives the manual feed tray feeding roller.
		CL19	Drives the front deck (left) feeding roller.
		CL21	Switches delivery speed.

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B. Solenoids

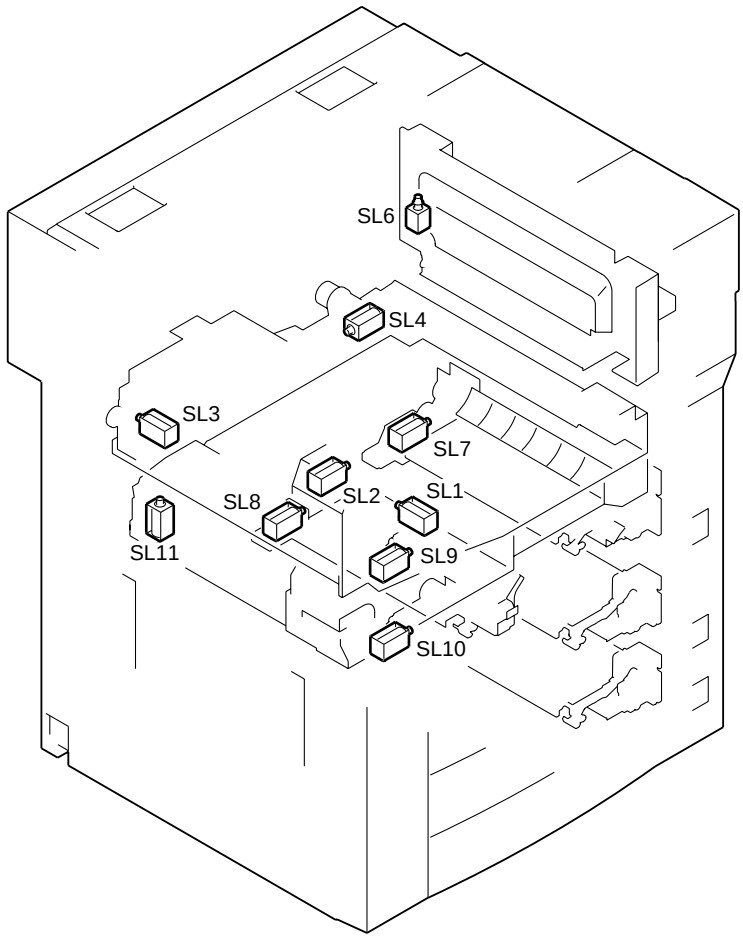


Figure 13-602

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Solenoids

Symbol	Name	Notation	Description
	Solenoid	SL1 SL2 SL3 SL4 SL6 SL7 SL8 SL9 SL10 SL11	Drives the fixing inlet guide. Drives the fixing cleaning belt. Drives the delivery flapper. Locks the fixing/feeding unit. Drives the manual feed tray pickup latch. Drives the front deck (right) pickup mechanism. Drives the front deck (left) pickup mechanism. Drives the cassette 3 pickup mechanism. Drives the cassette 4 pickup mechanism. Drives the reversing flapper.

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C. Motors

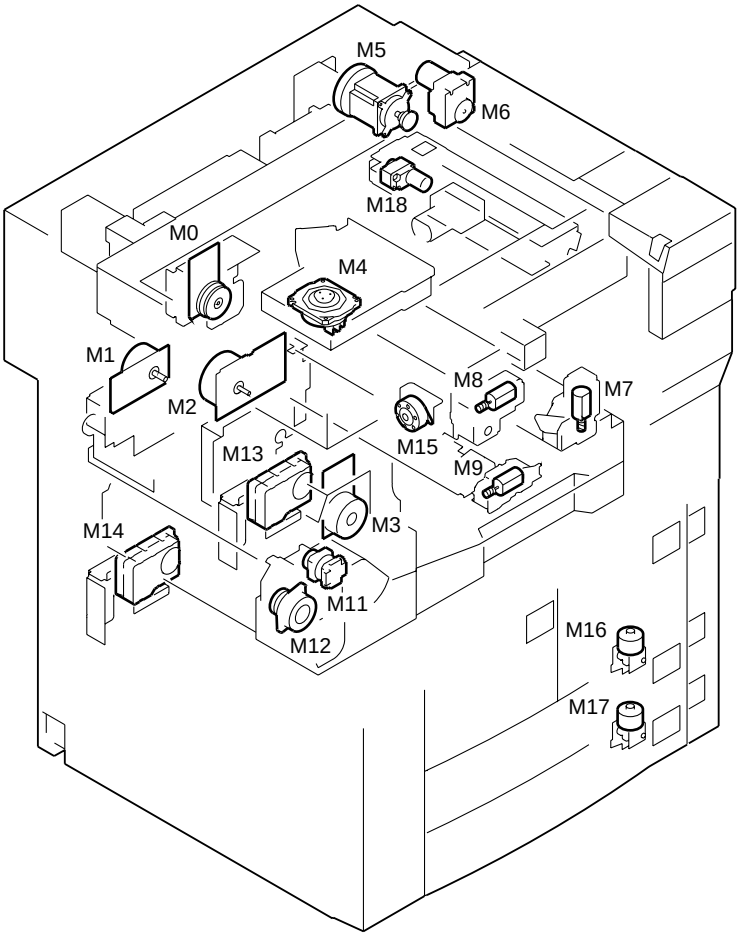


Figure 13-603

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Motors

Symbol	Name	Notation	Description
	Motor	M0	Drum motor
		M1	Main motor
		M2	Pickup motor
		M3	Fixing motor
		M4	Laser scanner motor
		M5	Scanner motor
		M6	Cartridge motor
		M7	Pre-transfer charging wire cleaner motor
		M8	Primary charging wire cleaner motor
		M9	Transfer separation charging wire cleaner motor
		M11	Reversal motor
		M12	Duplexing feeding motor
		M13	Front deck (right) lifter motor
		M14	Front deck (left) lifter motor
		M15	Horizontal registration motor
		M16	Cassette 3 lifter motor
		M17	Cassette 4 lifter motor
		M18	Hopper inside toner feeder motor

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D. Fans

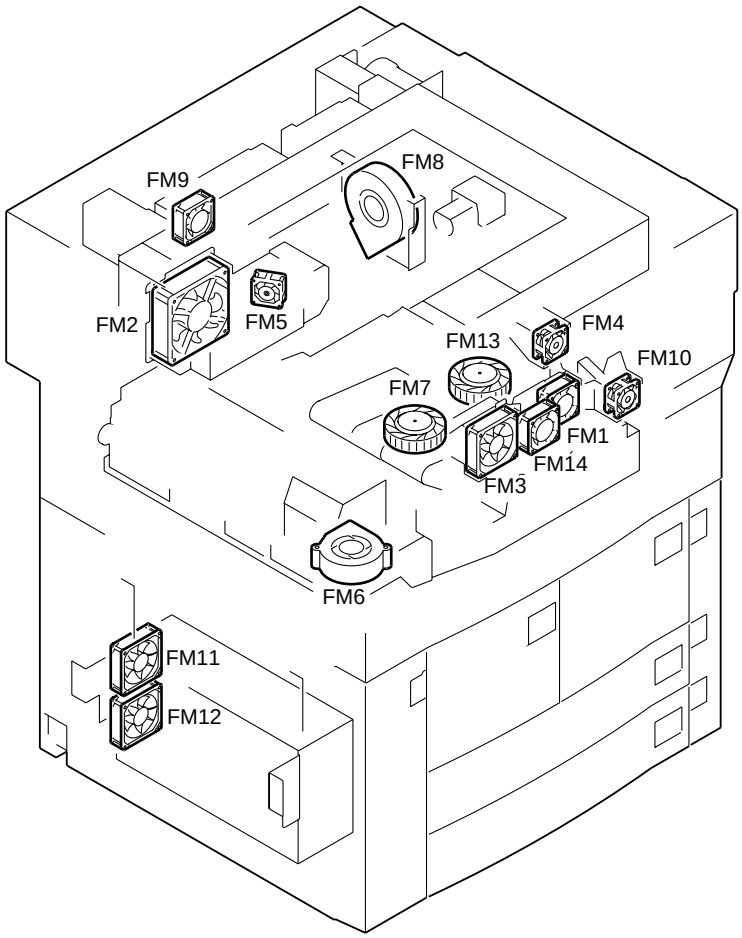
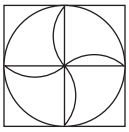


Figure 13-604

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Fans

Symbol	Name	Notation	Description
	Fans	FM1	Primary charging assembly fan
		FM2	Fixing assembly heat discharge fan
		FM3	Scanner cooling fan
		FM4	Stream reading fan
		FM5	Laser driver cooling fan
		FM6	De-curling fan
		FM7	Feeding fan
		FM8	Drum fan
		FM9	Inverter cooling fan
		FM10	Pre-transfer charging assembly fan
		FM11	Power supply cooling fan 1
		FM12	Power supply cooling fan 2
		FM13	Separation fan
		FM14	Laser scanner fan

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E. Sensors 1

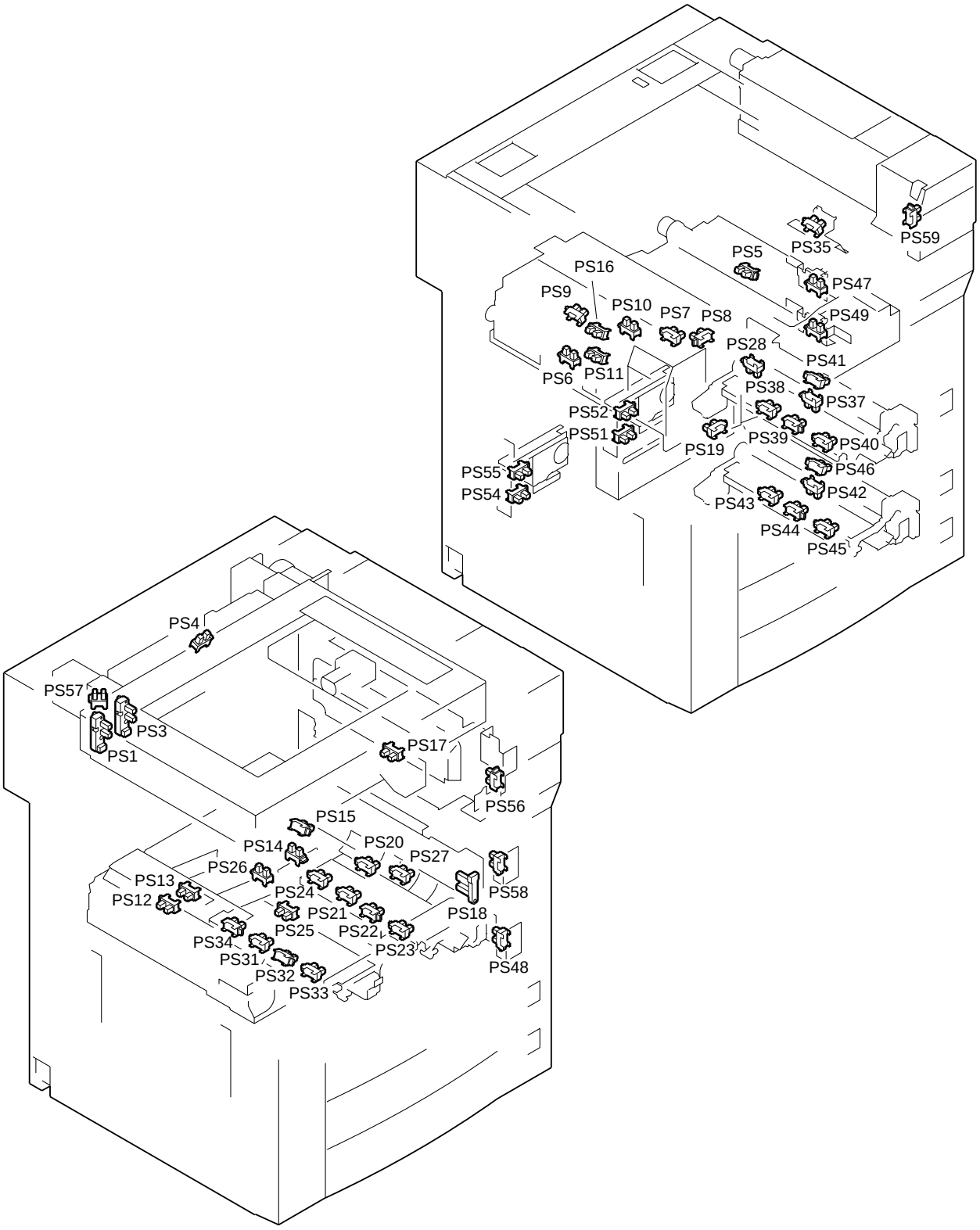
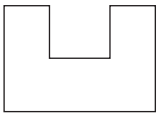


Figure 13-605

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Sensors 1

Symbol	Name	Notation	Description
	Photointerrupter	PS1	Scanner home position detection
		PS3	Image leading edge detection
		PS4	ADF open/closed detection
		PS5	Registration paper detection
		PS6	Fixing claw jam detection
		PS7	Fixing cleaning belt detection
		PS8	Fixing cleaning belt warning detection
		PS9	Internal delivery paper detection
		PS10	External delivery paper detection
		PS11	Fixing feeding unit outlet paper detection
		PS12	Duplexing reversal paper detection
		PS13	U-turn paper detection
		PS14	Pre-confluence paper detection
		PS15	Post-confluence paper detection
		PS16	Reversal paper detection
		PS17	Manual feed tray paper detection
		PS18	Horizontal registration paper detection
		PS19	Waste toner case full detection
		PS20	Front deck (right) pickup paper detection
		PS21	Front deck (right) lifter position detection
		PS22	Front deck (right) paper detection
		PS23	Front deck (right) open/closed detection
		PS24	Front deck (right) lifter upper limit detection
		PS25	Front deck (left) pickup paper detection
		PS26	Front deck (left) feeding paper detection
		PS27	Front deck (right) feeding paper detection
		PS28	Fixing/feeding unit releasing lever detection
		PS31	Front deck (left) lifter position detection
		PS32	Front deck (left) paper detection
		PS33	Front deck (left) open/closed detection
		PS34	Front deck (left) lifter upper limit detection
		PS35	Manual feed tray de-curling inlet paper detection
		PS37	Cassette 3 pickup paper detection
		PS38	Cassette 3 lifter position detection
		PS39	Cassette 3 paper detection
		PS40	Cassette 3 open/closed detection
		PS41	Vertical path 3 roller paper detection
		PS42	Cassette 4 pickup paper detection
		PS43	Cassette 4 lifter position detection
		PS44	Cassette 4 paper detection
		PS45	Cassette 4 open/closed detection
		PS46	Vertical path 4 roll paper detection
		PS47	Vertical path roller 1 paper detection
		PS48	Lower right cover open/closed detection
		PS49	Vertical path 2 roller paper detection
		PS51	Front deck (right) medium level paper detection
		PS52	Front deck (right) upper level paper detection
		PS54	Front deck (left) medium level paper detection
		PS55	Front deck (left) upper level paper detection
		PS56	Manual feed tray cover open/closed detection
		PS57	Copyboard glass detection
		PS58	Middle right cover open/closed detection
		PS59	Toner cartridge cover open/closed detection

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F. Sensors 2

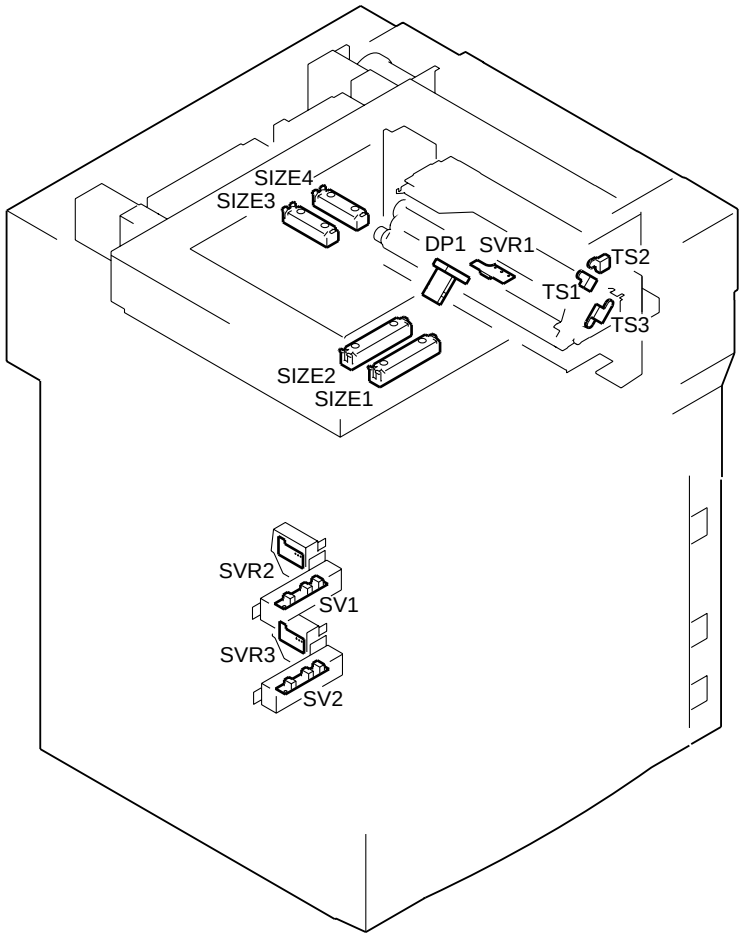
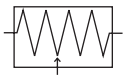


Figure 13-606

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Sensors 2

Symbol	Name	Notation	Description
TS	Piezoelectric oscillator	TS1 TS2 TS3	Hopper inside toner level detection 1 Hopper inside toner lower limit detection 2 Developing assembly inside toner level detection
DP	Potential sensor	DP1	Drum surface potential measurement
SV	Photointerrupter	SV1 SV2	Cassette 3 paper length detection Cassette 4 paper length detection
SIZE	Reflecting type sensor	SIZE1 SIZE2 SIZE3 SIZE4	Original size detection 1 Original size detection 2 Original size detection 3 Original size detection 4
	Slide registration	SVR1 SVR2 SVR3	Manual feed tray paper width detection Cassette 3 paper width detection Cassette 4 paper width detection

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G. Switches

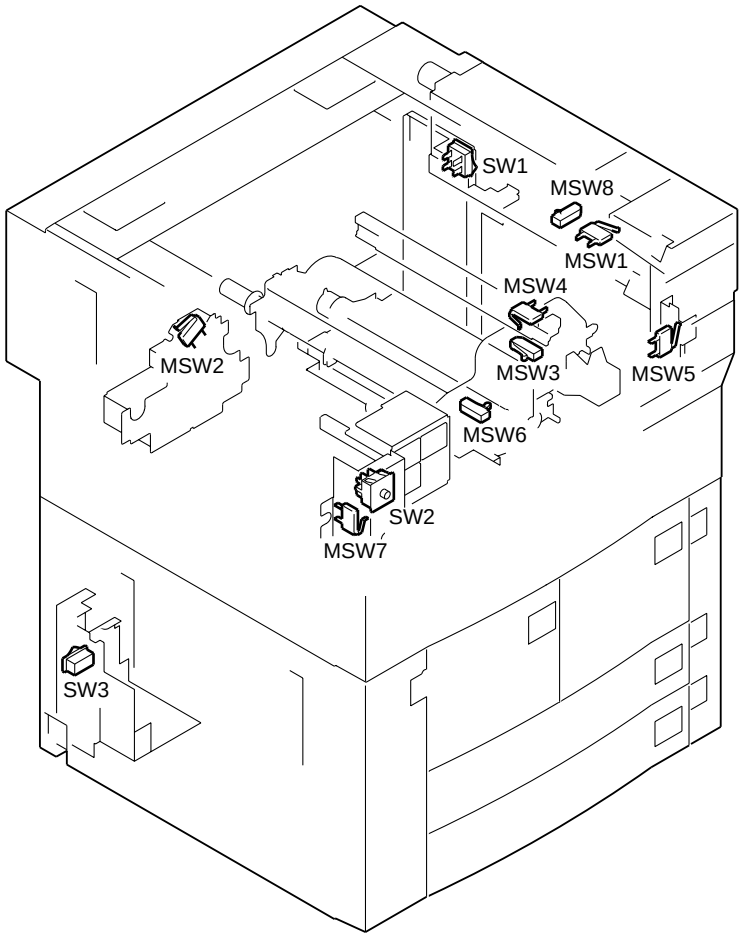


Figure 13-607

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Switches

Name	Notation	Description
Switch	SW1	Main switch
	SW2	Front cover switch
	SW3	Drum heater switch
	MSW1	Cartridge detection
	MSW2	Waste toner clogging detection
	MSW3	Pre-transfer charging wire cleaner home position detection
	MSW4	Primary charging wire cleaner home position detection
	MSW5	Manual feed tray cover open/closed detection
	MSW6	Transfer/separation charging wire cleaner home position detection
	MSW7	Front cover open/closed detection
	MSW8	Cartridge motor drive

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H. Counters, Heaters, Fuses, and Others

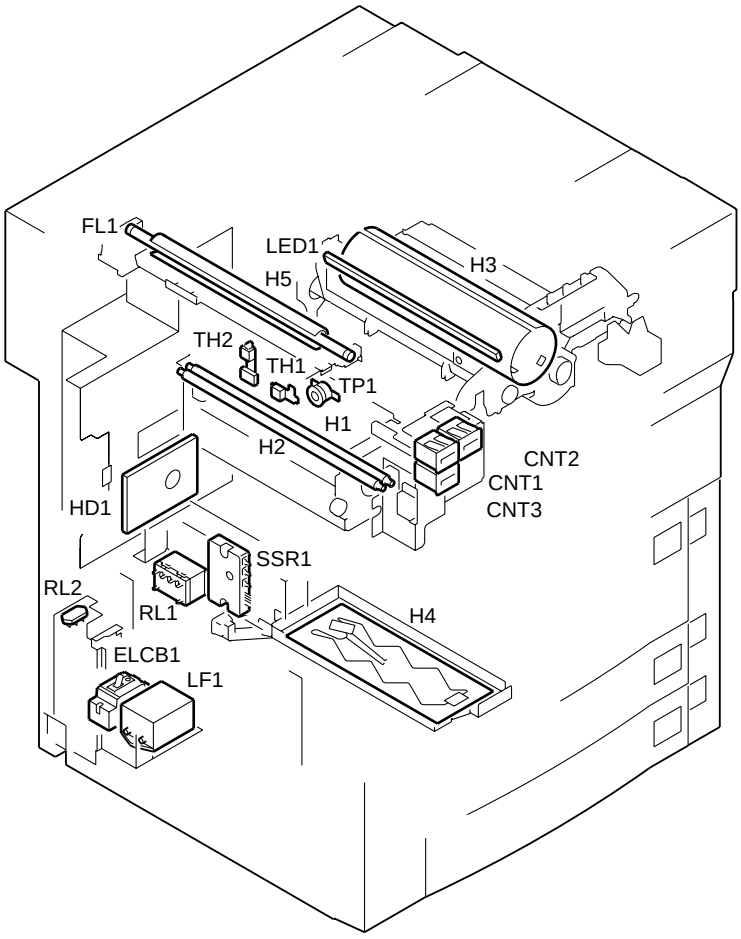


Figure 13-608

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Counters, Heaters, Fuses, and Others

Name	Notation	Description
Counter	CNT1 CNT2 CNT3	Total counter Options counter (some 230-V models only) Printer counter
SSR	SSR1	Solid state relay
Scanning lamp (fluorescent lamp)	FL1	Scanning lamp
Heater	H1 H2 H3 H4 H5	Fixing main heater Fixing sub heater Drum heater Cassette heater (standard with 100-V) Scanning lamp heater
Thermistor	TH1 TH2	Fixing heater main thermistor Fixing heater sub thermistor (end part)
Thermal switch	TP1	Fixing heater thermal switch
Leakage breaker	ELCB1	Leakage breaker
Line filter	LF1	AC power supply noise removal
Relay	RL1 RL2	Fixing heater power supply Drum heater/cassette heater power supply
Pre-exposure lamp	LED1	Drum pre-exposure
Image server (hard disk)	HD1	Hard disk memory

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I. PCBs

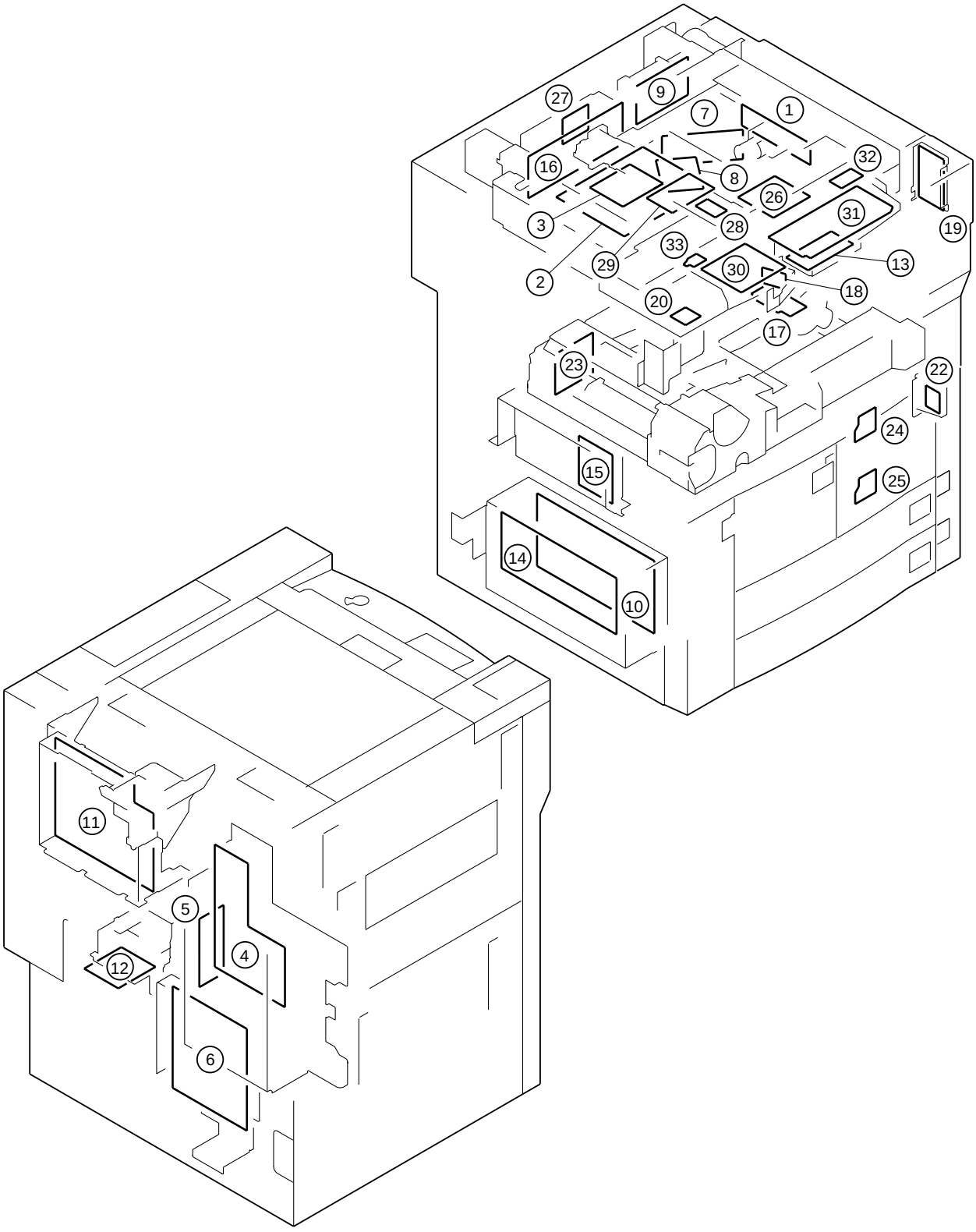


Figure 13-609

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PCBs

Notation	Name	Description
1	CCD PCB	CCD drive/analog image processing
2	Image processor PCB	Digital image processing
3	Page memory PCB	Image data storage
4	MFC PCB	System control
5	System motherboard	Signal relay
6	DC controller PCB	DC load control
7	Laser driver PCB 1	Laser diode drive
8	Laser driver PCB 2	Laser intensity control
9	Scanner motor drier PCB	Scanner motor driver
10	DC power supply PCB	DC power supply
11	HVT-DC1 PCB	High-voltage DC component generation
12	HVT-AC PCB	High-voltage AC component generation
13	Bi-Centronics PCB	Downloading I/F
14	Relay PCB	DC power supply distribution/supply
15	Heater driver PCB	Cassette heater drive
16	Fluorescent inverter PCB	Fluorescent lamp activation control
17	Drum heater control PCB	Drum heater drive
18	BD PCB	Laser beam detection
19	Potential control PCB	Drum surface potential control
20	Options counter PCB	Options counter drive
22	Environment sensor PCB	Machine internal temperature/humidity detection
23	No-stacking PCB	Duplexing feeding unit drive
24	Cassette 3 paper level detection PCB	Cassette 3 paper level detection
25	Cassette 4 paper level detection PCB	Cassette 4 paper level detection
26	Laser scanner motor drier PCB	Laser scanner motor drive
27	Intensity control PCB	Fluorescent lamp intensity control
28	Intensity sensor PCB	Fluorescent lamp intensity detection
29	Original orientation detection PCB	Original orientation detection
30	Control panel CPU PCB	Control panel control
31	Control panel key and LED PCB	Control panel key input, LED indication
32	Control panel main switching PCB	Control panel power switch
33	Control panel volume PCB	Control panel contrast adjustment

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J. Side Paper Deck

1. Sensors and Switches

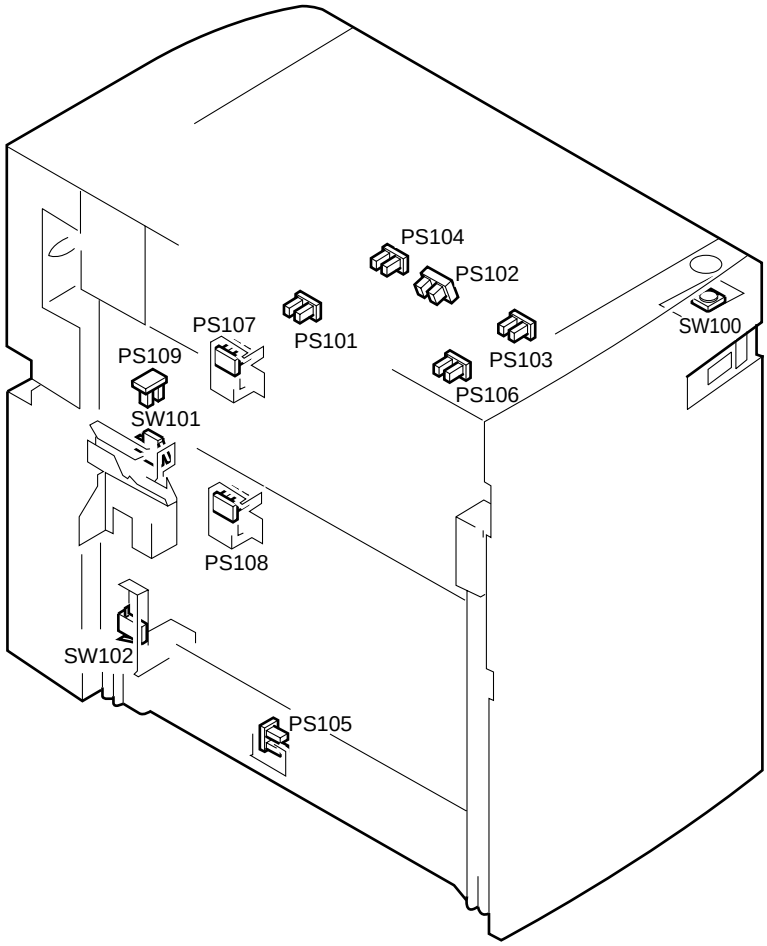
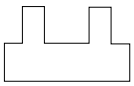
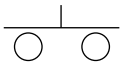
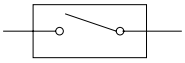


Figure 13-610 Side Paper Deck

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Symbol	Name	Notation	Description
	Photointerrupter	PS101	Detects paper picked up from the deck.
		PS102	Detects the absence of paper in the deck.
		PS103	Detects the upper limit of the deck lifter.
		PS104	Detects the position of the deck lifter.
		PS105	Detects installation (connection) of the deck.
		PS106	Detects paper in the vertical path for the deck.
		PS107	Detects the deck paper supply position.
		PS108	Detects the level of paper in the deck.
		PS109	Detects the state (open) of the deck.
	Switch	SW100	Deck open switch
	Microswitch	SW101	Deck open detecting switch
		SW102	Deck lifter upper limit detecting switch

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2. Motors, Clutches, Solenoids, and PCBs

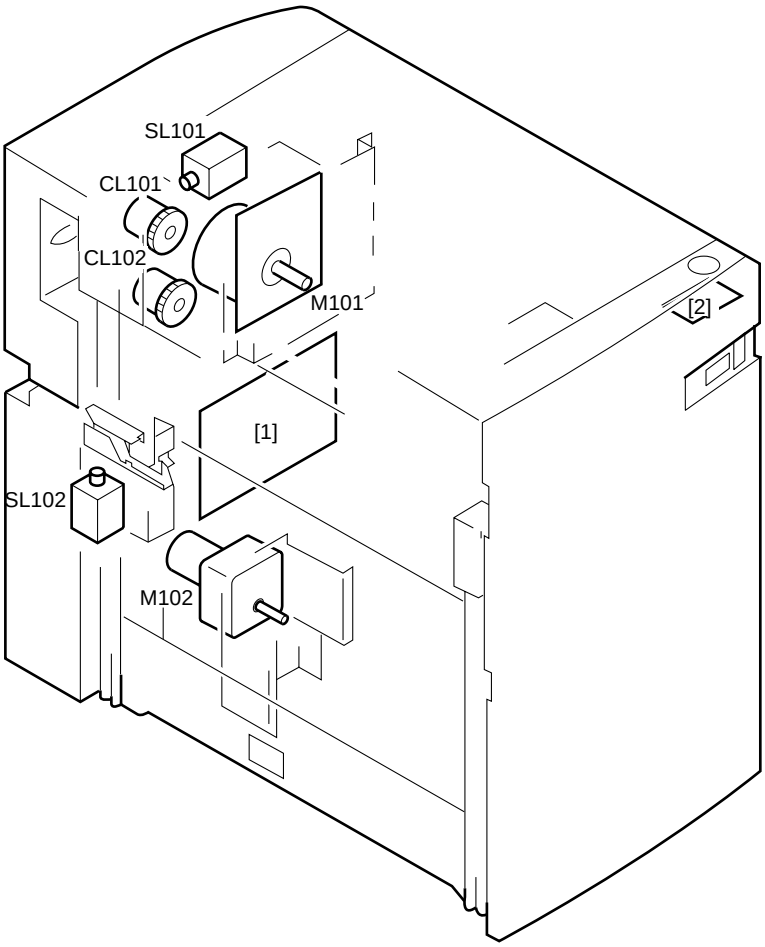
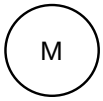
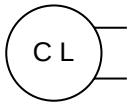
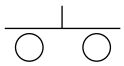


Figure 13-611 Side Paper Deck

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Symbol	Name	Notation	Description
	Motor	M101 M102	Deck main motor Deck lifter motor
	Clutch	CL101 CL102	Deck vertical path clutch Deck pickup clutch
	Solenoid	SL101 SL102	Deck pickup roller releasing solenoid Deck open solenoid
	PCB	[1] [2]	Side deck driver PCB Open switch PCB

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K. Variable Registers (VR), Light-Emitting Diodes, and Check Pins by PCB

Of the variable resistors (VR), light-emitting diodes, and switches found inside the machine, those needed in the field are discussed.

Caution:

1. Some LEDs emit dim light even when they are off. This is a normal condition, and must be kept in mind.
2. VRs that may be used in the field.

: 

VRs that must not be used in the field

: 

Caution:

The VRs and check pins not found in the tables are for factory use only. They require special tools and high accuracy and, therefore, must not be touched in the fieled when making adjustments and checks.

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1. MFC PCB

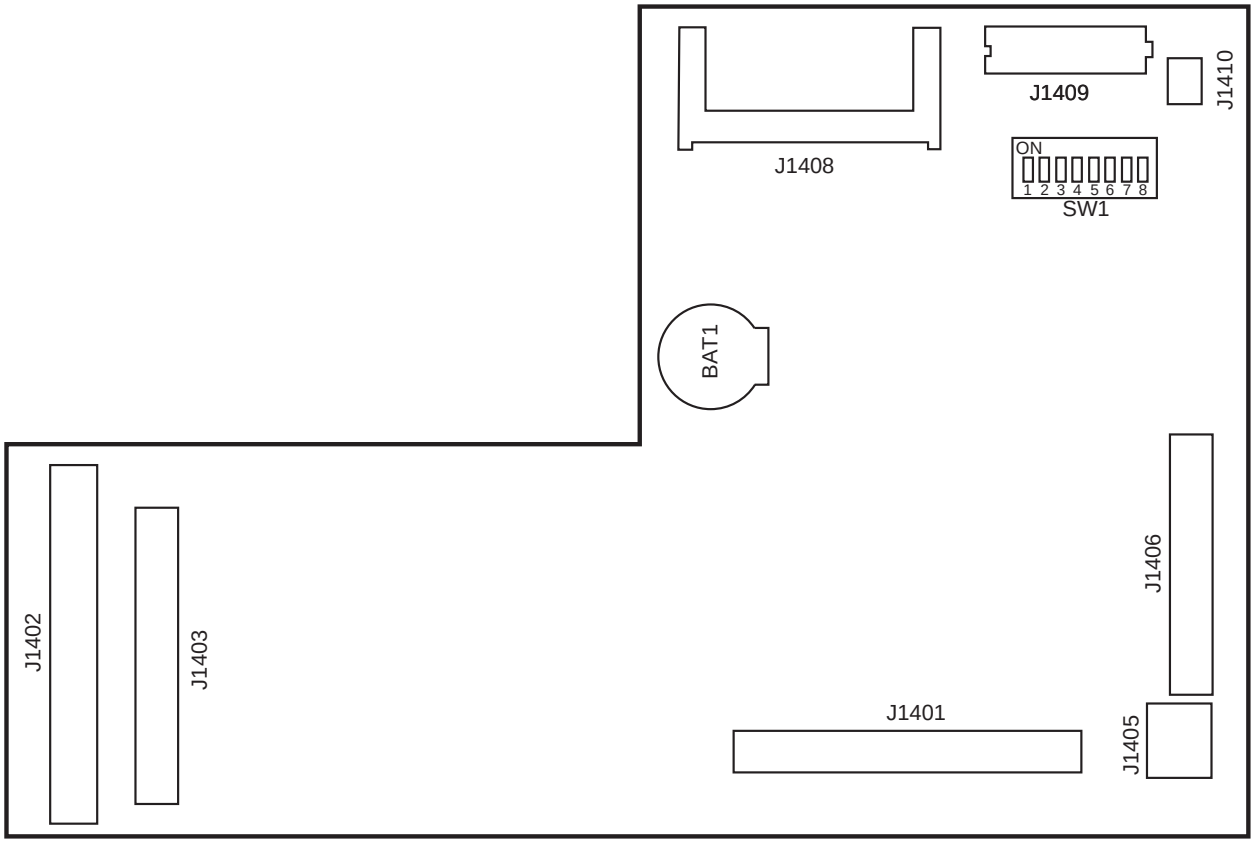


Figure 13-612

The functions of the DIP switch (SW1) are as follows; use it to change the country (site) of installation:

Setting	Configuration
	AB
	A
	INCH
	AB/INCH

2. Image Processor PCB

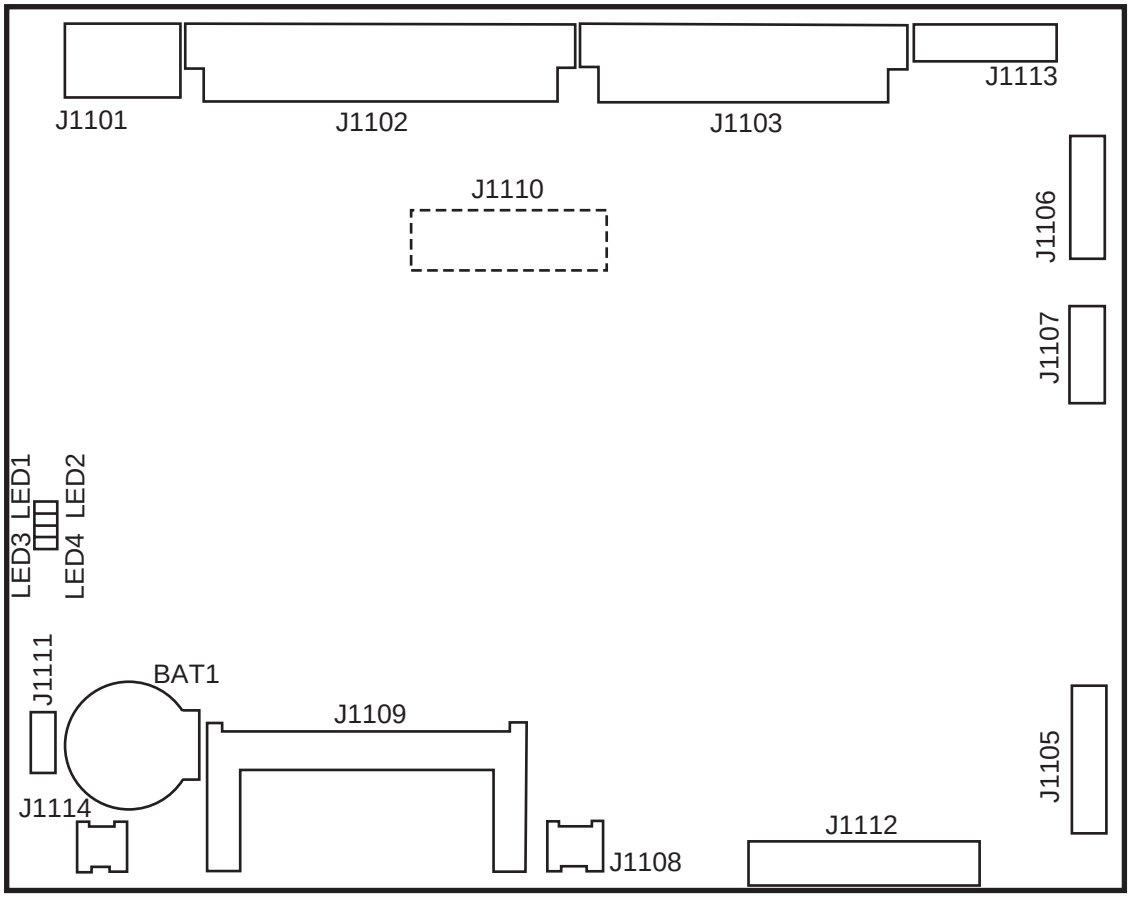


Figure 13-613

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3. DC Controller PCB

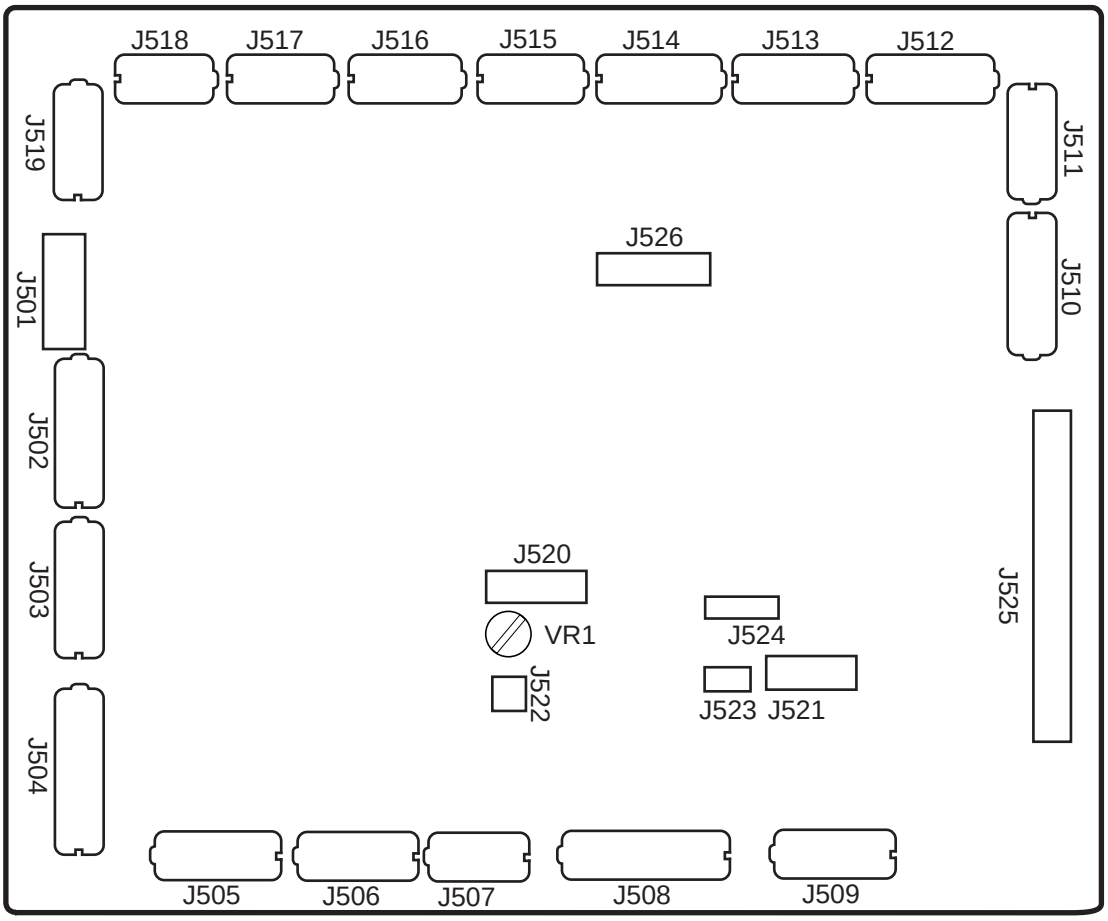


Figure 13-614

4. DC Power Supply PCB

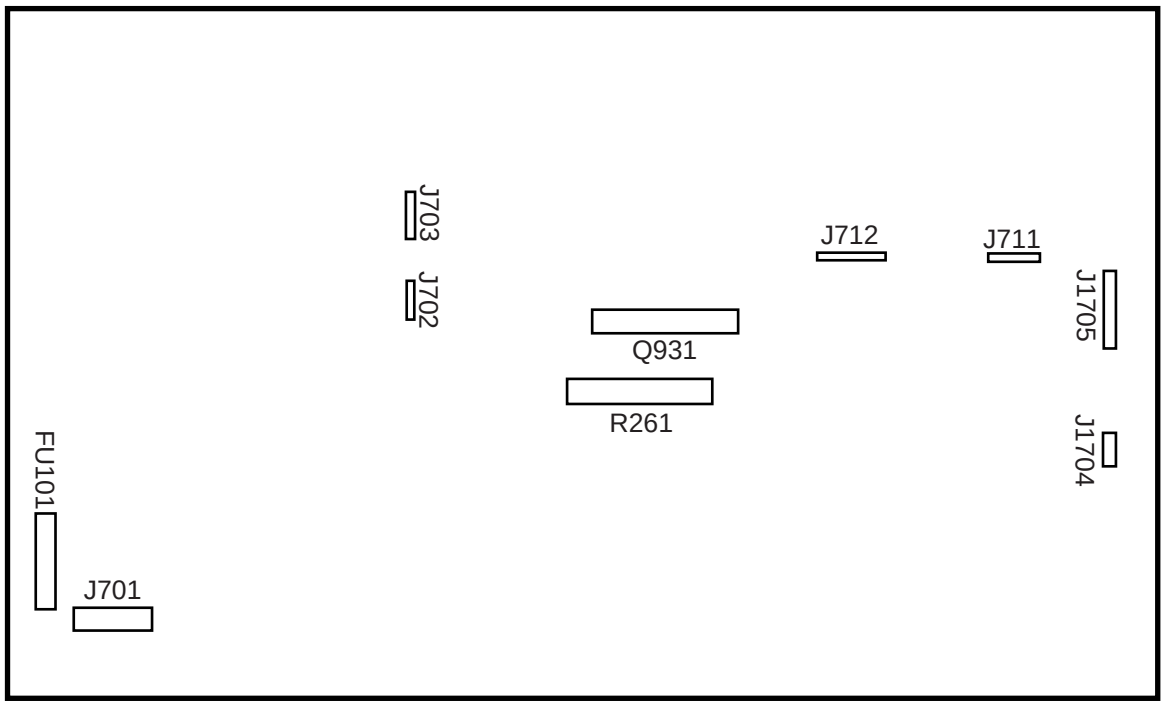


Figure 13-615

5. Relay PCB

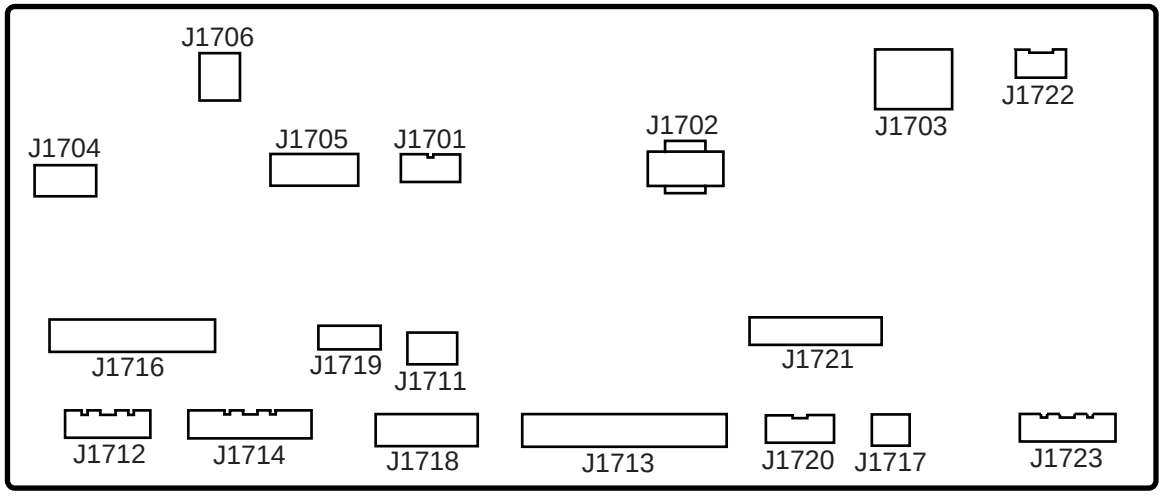


Figure 13-616

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6. Control Panel CPU PCB

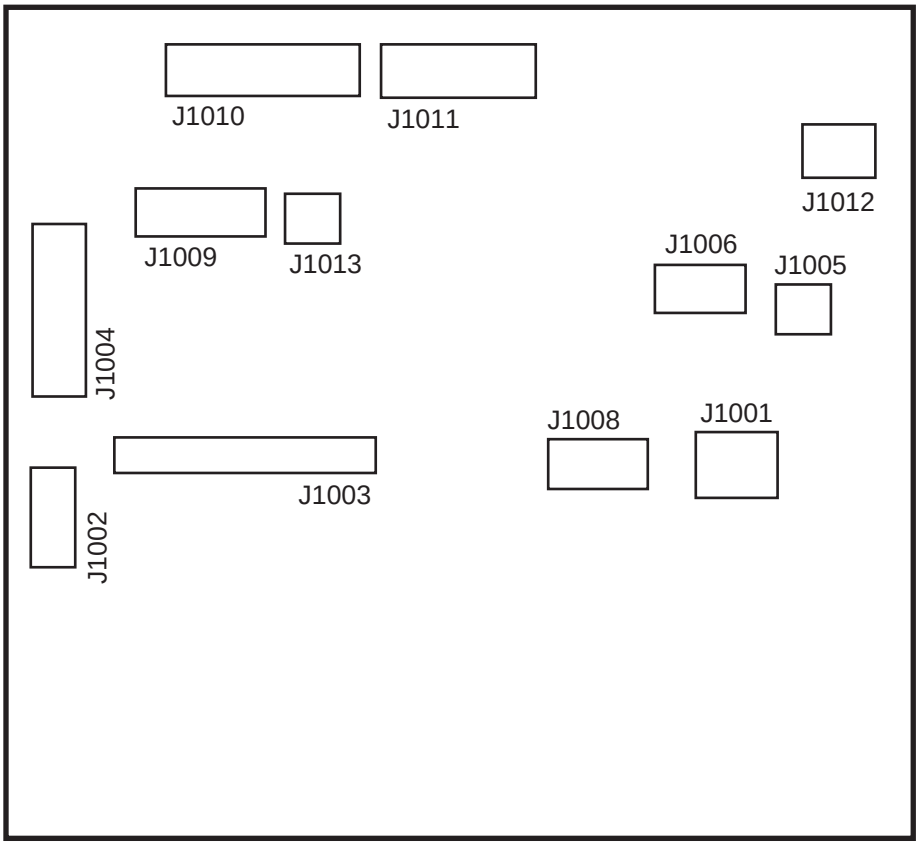


Figure 13-617

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7. HV-DC PCB

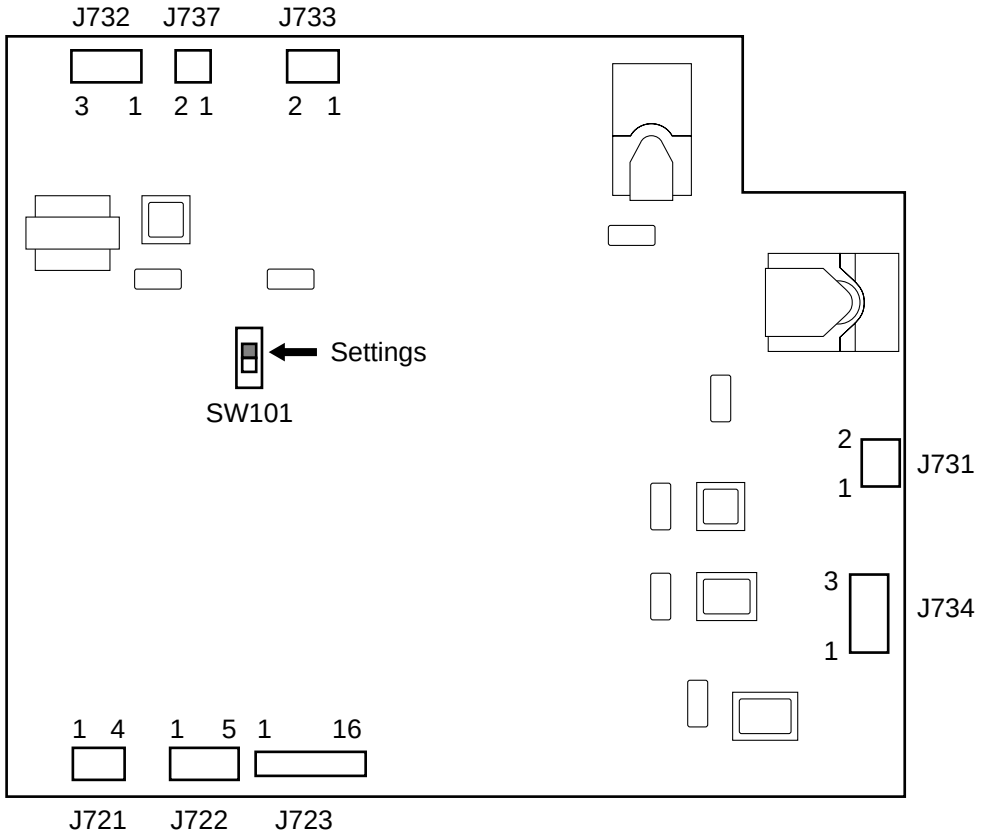


Figure 13-618

The slide switch (SW101) is for factory use only, and is not used for servicing work in the field. (Keep it as it is set at the factory.)

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8. Side Deck Driver (side paper deck)

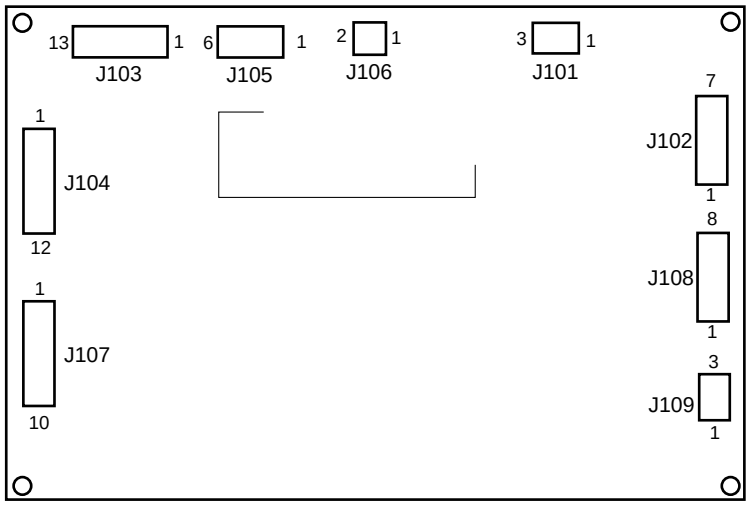


Figure 13-619

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VII . UPGRADING THE COPIER

The copier may be upgraded by either of the following two ways:
[1] Replacing the DIMM on the image processor PCB and the DIMM on the MFC PCB; or
[2] Re-writing the contents of the DIMM by downloading from the computer.

A. Replacing the DIMM

Figure 13-701 shows where the DIMMs are mounted.

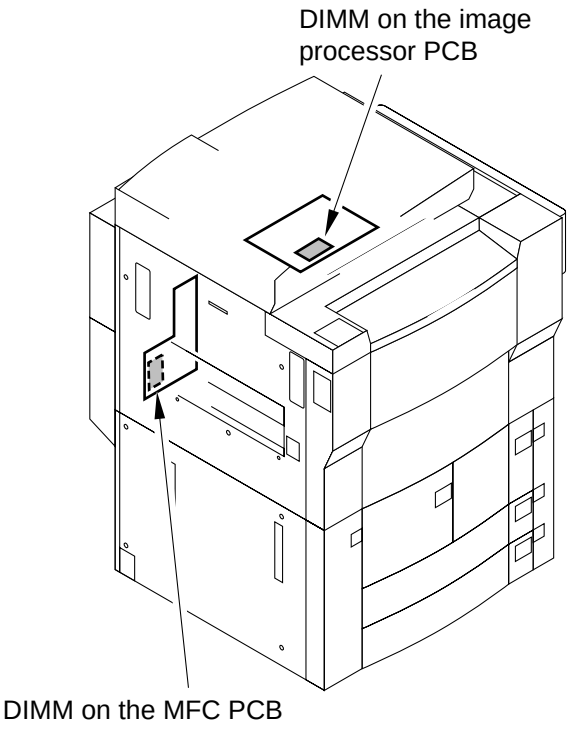


Figure 13-701

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1. Removing the DIMM of the Image Processor PCB

1) Turn off the main power switch, and disconnect the power cord from the power outlet.
2) Remove the copyboard glass, and detach the small cover of the IP cover by removing the screw.
3) Open the claws of the slot, and pull off the DIMM as if to lift it at an angle.

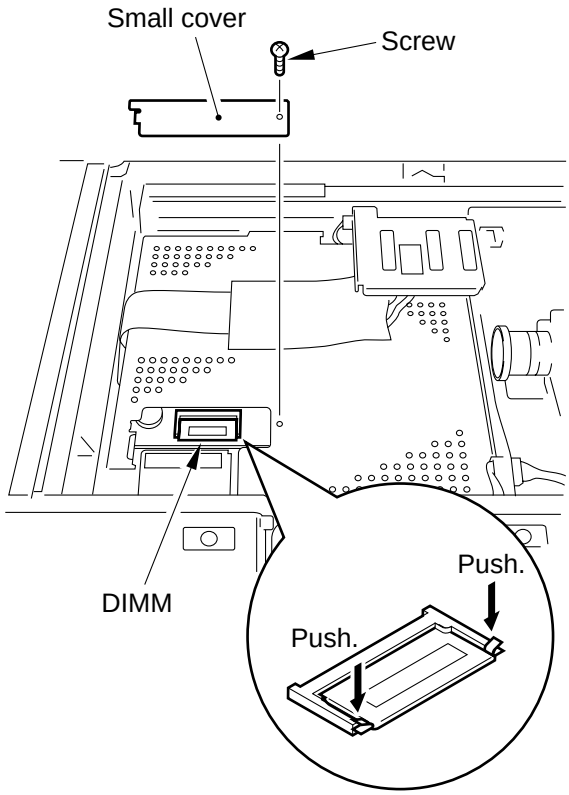


Figure 13-702

2. Removing the DIMM of the MFC PCB

1) Turn off the main power switch, and disconnect the power cord from the power outlet.
2) If the printer board is installed, remove it.
3) Remove the rear cover.
4) Open the claws of the slot, and remove the DIMM as if to lift it at an angle.

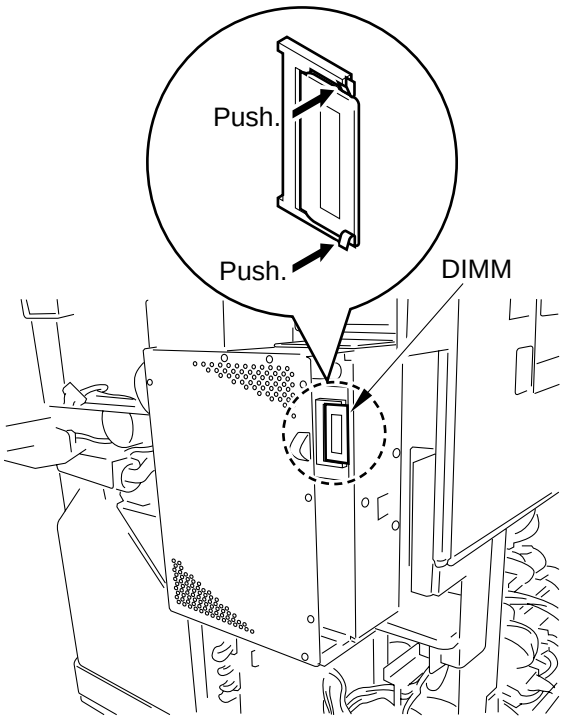


Figure 13-703

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B. Downloading

1. Before the Work

• Prepare a PC to which the copier service support tool (downloading tool) has been installed.
• Prepare a bi-Centronics cable (with the "IEEE 1284Std-compliant" notation).

2. Downloading

a. Making Connections

• Check to make sure that the data lamp is off.

1) Turn off the copier's main power switch, and disconnect the power plug; if the printer board is installed, disconnect the cable.
2) Open the front door, and open the connector cover for downloading.

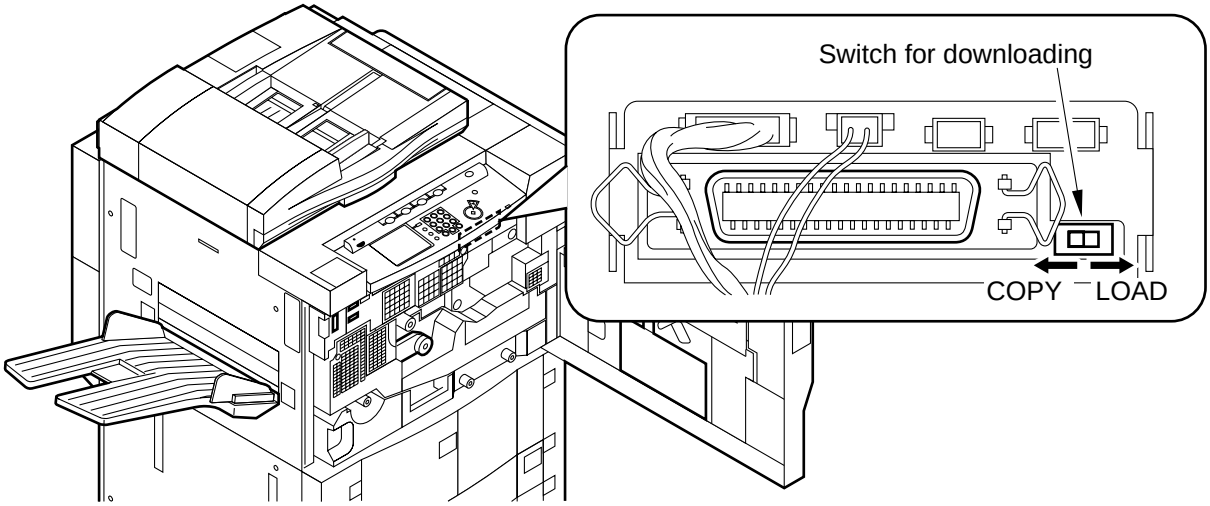


Figure 13-704

3) Slide the switch shown in Figure 13-705 to LOAD position, and disconnect the two connectors.

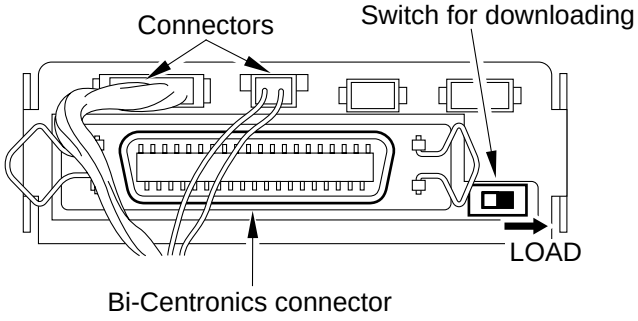


Figure 13-705

4) Connect the copier and the PCB with the bi-Centronics cable.

• Keep the PC OFF.
• Be sure that the 25-pin end of the bi-Centronics cable is to the PCB and the 36-pin end is to the copier.

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5) Turn on the PCB, and start the copier service support tool.
6) Connect the copier's power plug to the power outlet, and turn on the main power switch.

b. Downloading

1) When the copier service support tool has started, select 'To Main Menu' on the screen.
2) Select 'Next' under 'Download/Upload'.

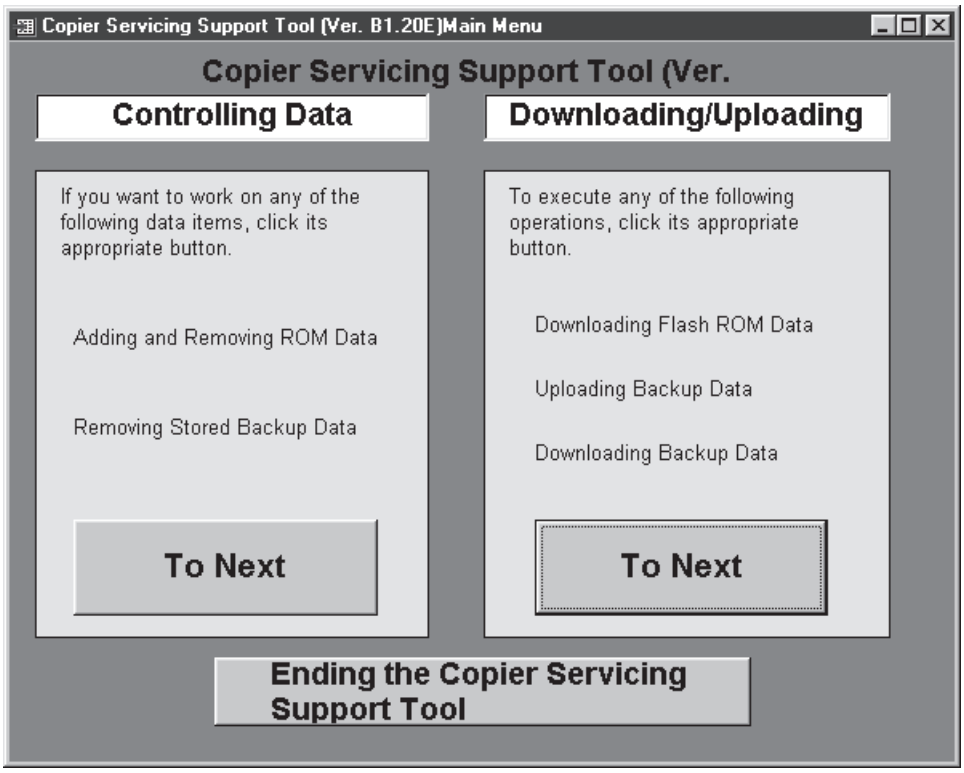

Copier Servicing Support Tool (Ver. B1.20E)Main Menu
Copier Servicing Support Tool (Ver.
Controlling Data
Downloading/Uploading
If you want to work on any of the following data items, click its appropriate button.
Adding and Removing ROM Data
Removing Stored Backup Data
To Next
To execute any of the following operations, click its appropriate button.
Downloading Flash ROM Data
Uploading Backup Data
Downloading Backup Data
To Next
Ending the Copier Servicing Support Tool

Figure 13-706

3) Select the model and PCB for downloading.
   IP: DIMM for IP-CPU
   MFC: DIMM for MFC
4) Start downloading for the flash ROM as instructed on the screen of the PC.
5) When downloading has ended, turn off the PC as follows:
   'OK' → 'To Main Menu' → 'End Copier Service Support Tool' → 'End'

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c. After Downloading

1) Turn off the copier's main power switch, and disconnect the power plug.
2) Disconnect the bi-Centronics cable from the PC and the copier.
3) Slide the downloading switch to "COPY" side.

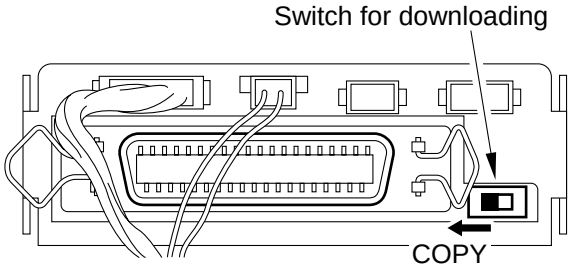


Figure 13-707

4) Close the connector cover, and close the front door.
5) If the copier is equipped with fax functions, connect the modular cable.
6) Turn on the main power switch.
7) Start service mode, and check the ROM version:
   COPIER>DISPLAY>VERSION

VIII . SERVICE MODE

A. Outline

The service mode screen configuration has a 3-layer construction: Initial screen, Level 1/Level 2 screen, and Level 3 screen.

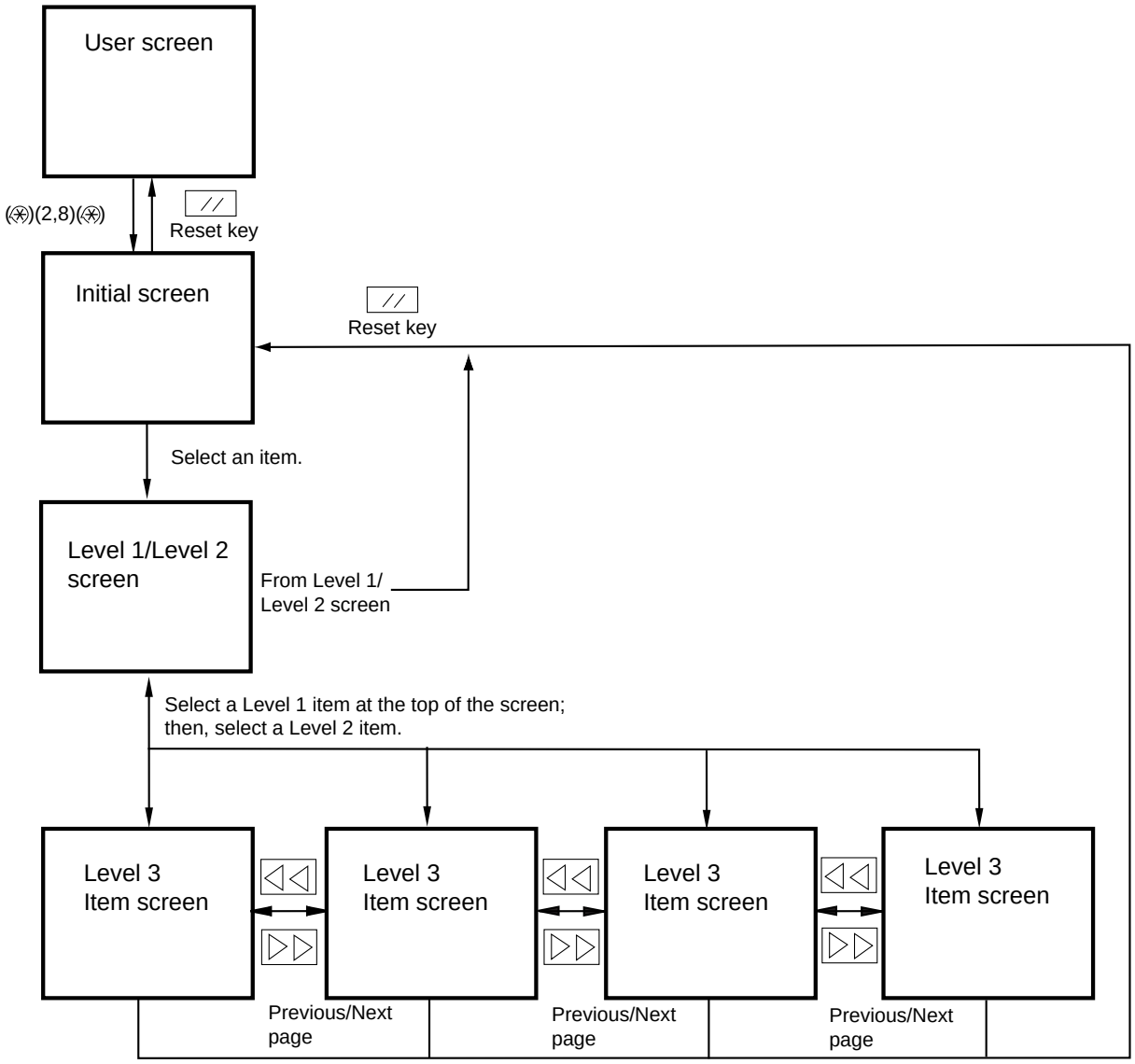


Figure 13-A801 Configuration of the Screens

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The copier's service mode is divided into the following seven:

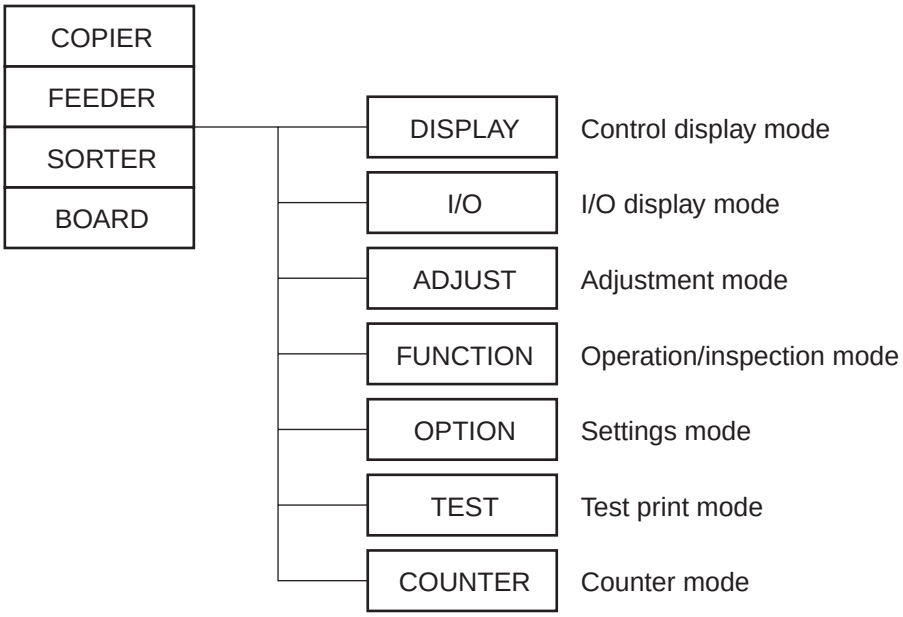


Figure 13-A802 Service Mode Classification

1. Starting Service Mode and Selecting an Item

1) Press the asterisk key "✳" on the control panel.
2) Press "2" and "8" on the keypad at the same time.
3) Press the asterisk key "✳" on the control panel.

■The above operations bring up the Initial screen (Figure 13-A803).

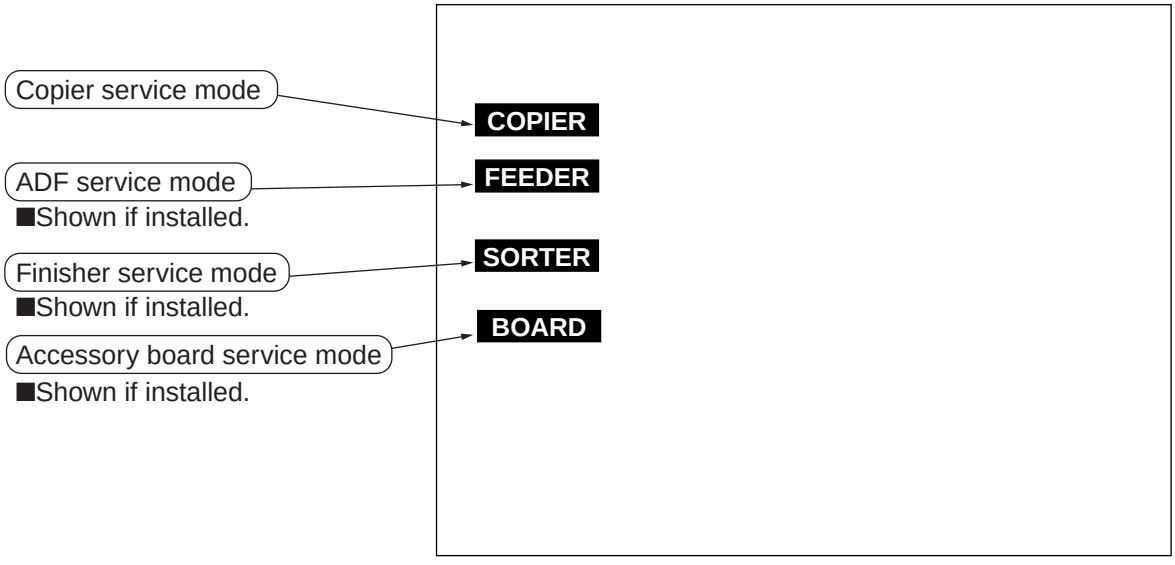


Figure 13-A803 Initial Screen

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2. Ending Service Mode

Press the Reset key once to return to the Service Mode Initial screen (Figure 13-A803).
Press the Reset key twice to end service mode and return to the User screen (standard screen).

3. Backing Up the RAM

Each machine is adjusted at the factory, and its adjustment values are recorded on the service label (attached to the cover of the service document case).

Item A: Value retained by the RAM on the image processor PCB.
Item B: Value retained by the RAM on the MFC PCB.

Table 13-A801

If you have replaced the above PCBs or initialized the RAMs, the corresponding values will be affected. If you have made adjustments or changed service mode values in the field, be sure to record the new values on the service label.

Item A		Factry	Field1	Field2	Field3	Item A		Factry	Field1	Field2	Field3
COPIER>ADJUST						COPIER>ADJUST					
LAMP	L-DATA	0				HV-PRI	GRID	0			
AE	AE-TBL	0				HV-TR	TR-N1	0			
ADJ-XY	ADJ-X	0					TR-N2	0			
	ADJ-Y	0					PRE-TR	0			
	ADJ-S	0				HV-SP	SP-N1	0			
CCD	GAIN-E	0					SP-N2	0			
	GAIN-O	0				FEED-ADJ	REGST	0			
	OFST-E	0					ADJ-REFE	0			
	OFST-O	0				CST-ADJ	C3-STMTR	0			
	SH-TRGT	0					C3-A4R	0			
LASER	PVE-OFST	0					C4-STMTR	0			
	LA-DELAY	0					C4-A4R	0			
	LA-PWR-A	0					MF-A4R	0			
	LA-PWR-B	0					MF-A6R	0			
	IP-DELAY	0					MF-A4	0			
DEVELOP	DE-DC	0					C3-LVOL	0			
	DE-NO-DC	0					C3-HVOL	0			
	DE-OFST	0					C4-LVOL	0			
DENS	DENS-ADJ	0					C4-HVOL	0			
BLANK	BLANK-T	0				MISC	ATM	0			
	BLANK-B	0									
V-CONT	EPOTOFST	0				FEEDER>ADJUST					
	VL-OFST	0					STRD-S	0			
	VD-OFST	0					STRD-L	0			
Body No.				Date.	1998-11-07						

Item A			Factory	Field1	Field2	Field3
COPIER>OPTION	BODY	PO-CNT				
		TRNSG-SW				
		FIX-TEMP				
		CPMKP-SW				
		IDL-MODE				
		FUZZY				
		SCANSLCT				
		OHP-TEMP				
		PM-RD-MD				
		OHP-CNT				
		CNT-W/HM				
		PR-SEL				
		CNT-W/PR				
		FIX-TMP1				
		TRSW-P-B				
		SP-MODE				
		FTMP-DWN				
		DRUM-CLN				
		DRM-IDLE				
		F-GD-CNT				
	USER	SIZE-DET				
		PR-D-SEL				
	CST	P-SZ-C1				
		P-SZ-C2				
		C1-DWSW				
		C2-DWSW				
		DK-DWSW				
		C3-DWSW				
		C4-DWSW				
	ACC	DK-P				

Item A			Factory	Field1	Field2	Field3
FEEDER	OPTION	DOC-F-SW				
		SIZE-SW				
SORTER	OPTION	BLNK-SW				

Item B			Factory	Field1	Field2	Field3
COPIER>OPTION	BODY	MODEL-SZ				
	USER	COPY-LIM				
		SLEEP				
		WEB-DSP				
		DATE-DISP				
		MB-CCV				
		PM-DENS				
	CST	U1-NAME				
		U2-NAME				
		U3-NAME				
		U4-NAME				
		CST-U1				
		CST-U2				
		CST-U3				
		CST-U4				

Figure 13-A804 Service Label

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4. Basic Operation

a. Initial Screen

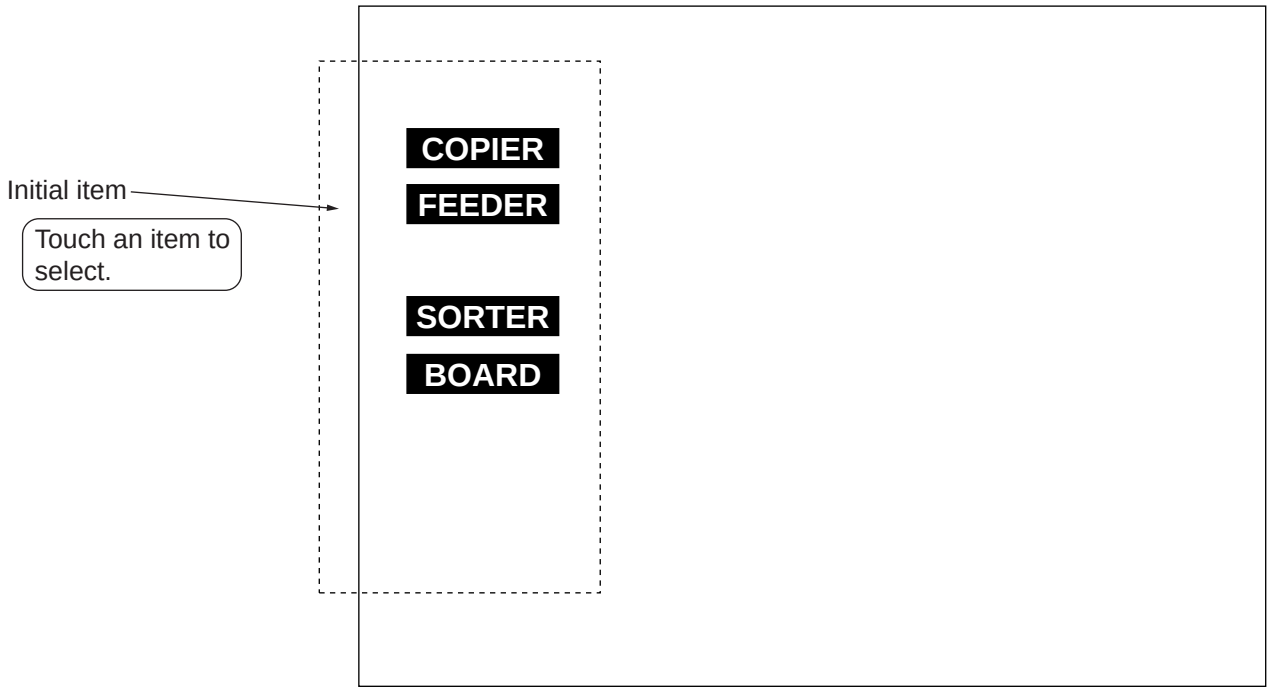


Figure 13-A805

b. Level 1/Level 2 Screen

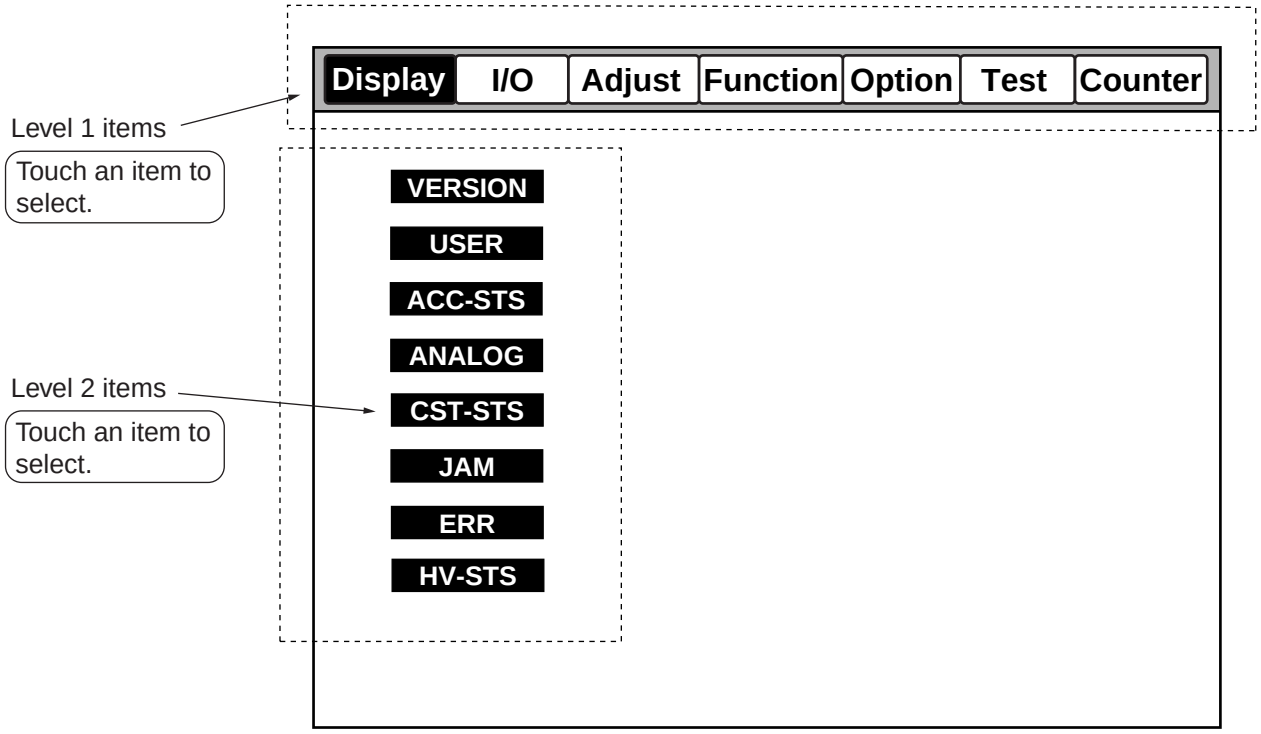


Figure 13-A806

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c. Level 3 Item Screen

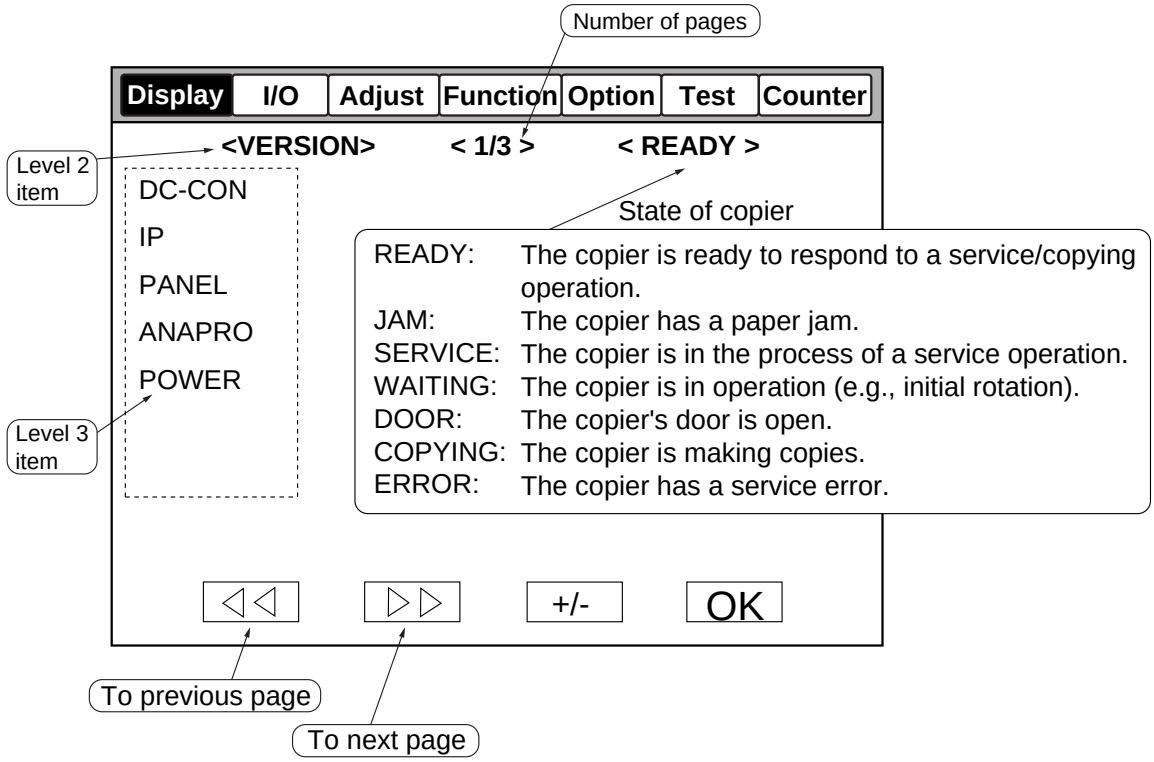
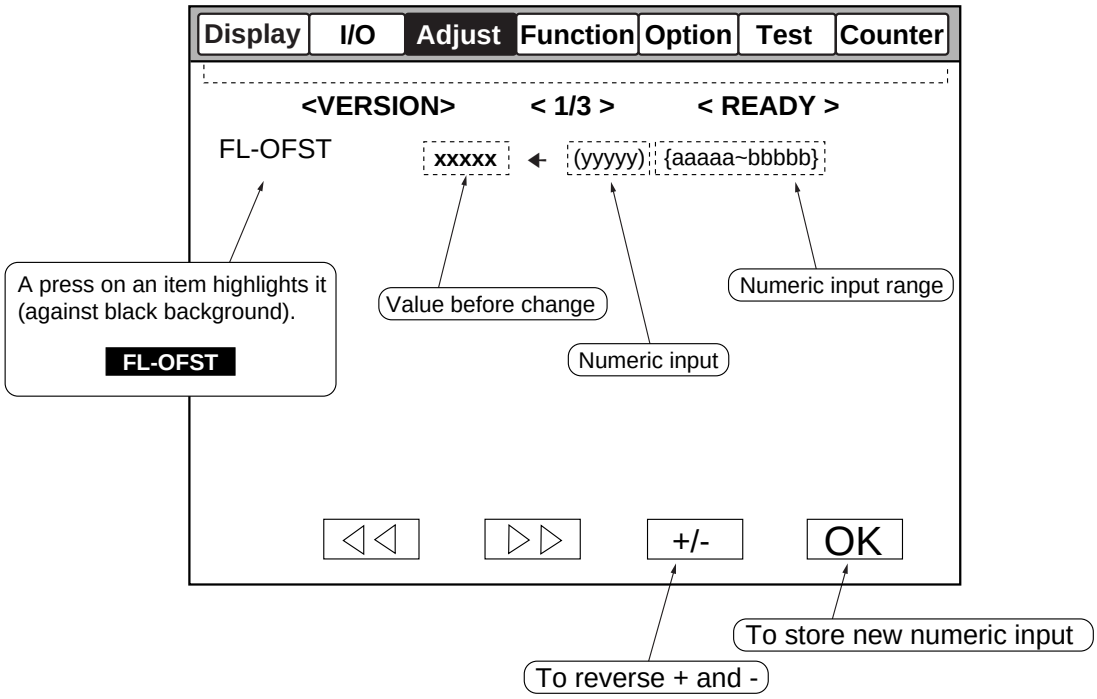


Figure 13-A807



Stop key: Use it to stop an ongoing operation.

Clear key: Use it to clear a numeric value.

Start key: Use it to make a copy without ending service mode.

Figure 13-A808

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B. DISPLAY Control Display Mode

When you select COPIER>DISPLAY, you will see the following screen, and are given the choices shown in the table that follows.

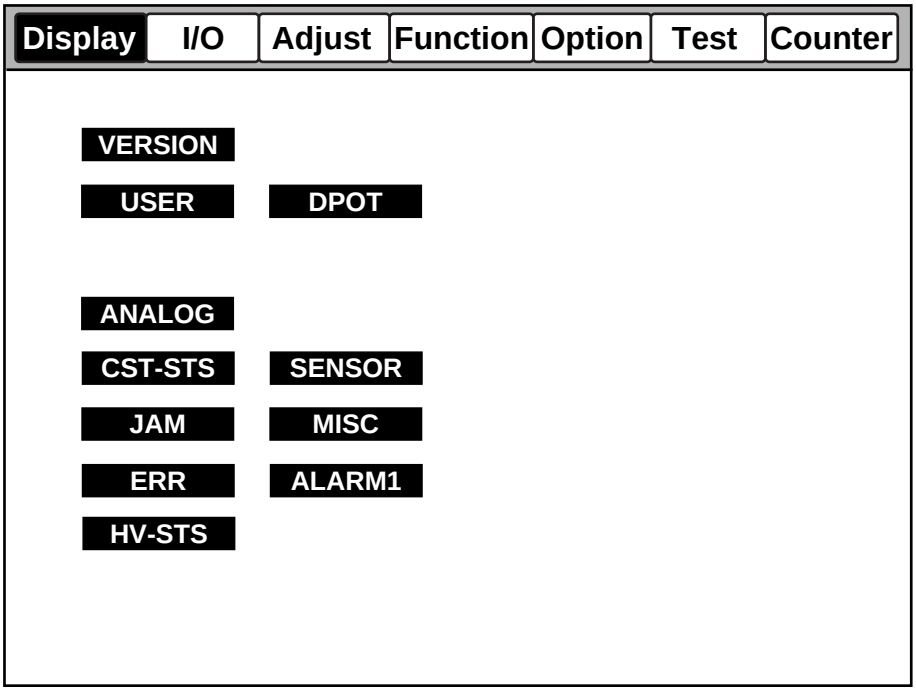


Figure 13-B801 COPIER>DISPLAY

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Items under COPIER>DISPLAY

Level 1	Level 2	Level 3	Description
DISPLAY	VERSION	DC-CON	Indicates the version of the ROM on the DC controller PCB.
		IP	Indicates the version of the ROM on the image processor PCB.
		FEEDER	Indicates the version of the ROM on the feeder controller PCB.
		SOR	Indicates the version of the ROM on the sorter controller PCB.
		PC/PCL	Indicates the version of the ROM on the PC/PCL controller PCB.
		LIPS	Indicates the version of the ROM on the LIPS controller PCB.
		MFC	Indicates the version of the ROM on the MFC PCB.
		PCL	Indicates the version of the ROM on the PCL controller PCB.
		PS/KANJI	Indicates the version of the ROM on the PS/KANJI controller PCB.
		SDL-STCH	Indicates the version of the ROM on the saddle stitcher controller PCB.
	USER	LANGUAGE	Indicates the language used.
		COUNTER	Indicates the count control type for the copy counters.
	ANALOG	TEMP	Indicates the machine temperaure humidity (detected by the environment sensor).
		HUM	Indicates the machine internal humidity (detected by the environment sensor).
		OPTICS	Indicates the temperature of the scanning lamp (detected by the fluorescent lamp temperature sensor H5).
		FIX-C	Indicates the temperature at the middle of the upper fixing roller (detected by the main thermistor TH1).
		FIX-E	Indicates the temperature of the ends of the upper fixing roller (detected y the sub thermistor TH2).
	CST-STS	WIDTH-C3	Indicates the paper size for the cassette 3.
		WIDTH-C4	Indicates the paper size for the cassette 4.
		WIDTH-MF	Indicates the paper width (new value) or the paper size for the manual feed tray.
	JAM		Indicates the jam history.
	ERR		Indicates the error history.
	HV-STS	PRIMARY	Indicates the current level (μA) of the primary charging assembly.
		PRI-GRID	Indicates the grid voltage (V) of the primary charging assembly.
		PRI-TR	Indicates the current level (μA) of the pre-transfer charging assembly.
		TR	Indicates the current level (μA) of the transfer charging assembly.
		SP	Indicates the current level of the separation charging assembly (μA).
		BIAS	Indicates the voltage of the developing DC bias (V).
	DPOT	DPOT-K	Indicates the surface potential (V) of the photosensitive drum.
		VL1M	Indicates the drum light area potential measurement (V).
		VDM	Indicates the drum dark area potential measurement (V).
	SENSOR	DOC-SZ	Indicates the size of an original detected by the original size sensor.
		DOC-SZ1	Indicates the output of the original size sensor 1.
		DOC-SZ2	Indicates the output of the original size sensor 2.
		DOC-SZ3	Indicates the output of the original size sensor 3.
		DOC-SZ4	Indicates the output of the original size sensor 4.
	MISC	FL-LIFE	Indicates the activation duty ratio (%) of the scanning lamp.
	ALARM1		Indicates alarm codes.

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Items under FEEDER>ADJUST

Level 1	Level 3	Description
DISPLAY	FEEDSIZE	Indicates the size of an original detected by the feeder.

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<VERSION>

COPIER>DISPLAY

Indicates the versions of the ROMs on the copier and accessory PCBs.

Level 3	Description	Remarks
DC-CON	Indicates the version of the ROM on the DC controller PCB.	Indication <**xx, yy**> Version number R&D control number
IP	Indicates the version of the ROM on the image processor PCB.	
FEEDER	Indicates the version of the ROM on the feeder controller PCB.	
SORTER	Indicates the version of the ROM on the sorter controller PCB.	
PS/PCL	Indicates the version of the ROM on the PS/PCL controller PCB.	
LIPS	Indicates the version of the ROM on the LIPS controller PCB.	
MFC	Indicates the version of the ROM on the MFC PCB.	
PCL	Indicates the version of the ROM on the PCL controller PCB.	
PS/KANJI	Indicates the version of the ROM on the PS/Kanji controller PCB.	
SDL-STCH	Indicates the version of the ROM on the saddle stitcher controller PCB.	

<USER>

Indicates the items related to the User screen and the user.

Level 3	Description	Remarks
LAN-GUAGE	Indicates the language used and the paper size configuration used.	Indication <**LANGUGE JP. oo. aa**> Language used Destination 00:CANON 01:OEM Paper configuration code aa: 00 AB; 01 Inch; 02 A; 03 All sizes
COUNTER	Indicates the type of count control for copy counters.	Indication <**COUNTER bb**> Details of each counter code bb: 00 Total; 01 Double-sided; 02 Small-size; 03 Large-size; 04 Large-size / Small-size; 10 Total / Print total; 14 Large-size; 15 Double-sided

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<ANALOG>
Indicates the readings of analog sensors.

COPIER>DISPLAY

Level 3	Description	Remarks
TEMP	Indicates the machine internal temperature (detected by the environment sensor).	Unit: °C
HUM	Indicates the machine internal relative humidity (detected by the environment sensor).	Unit: %RH
OPTICS	Indicates the temperature of the scanning lamp (indicated by the fluorescent lamp sensor).	Unit: °C
FIX-C	Indicates the temperature at the middle of the upper fixing roller (detected by the main thermistor TH1).	
FIX-E	Indicates the temperature of the ends of the upper fixing roller (detected by the sub thermistor TH2).	

<CST-STS>
Indicates the use of the cassette and the manual feed tray.

Level 3	Description	Remarks
WIDTH-C3	Indicates the paper size for the cassette 3.	The paper width is shown as a whole number, omitting decimal places.
WIDTH-C4	Indicates the paper size for the cassette 4 .	
WIDTH-MF	Indicates the paper size and the paper width (mm) for the manual feed tray.	

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<JAM>
Indicates jam data.

COPIER>DISPLAY

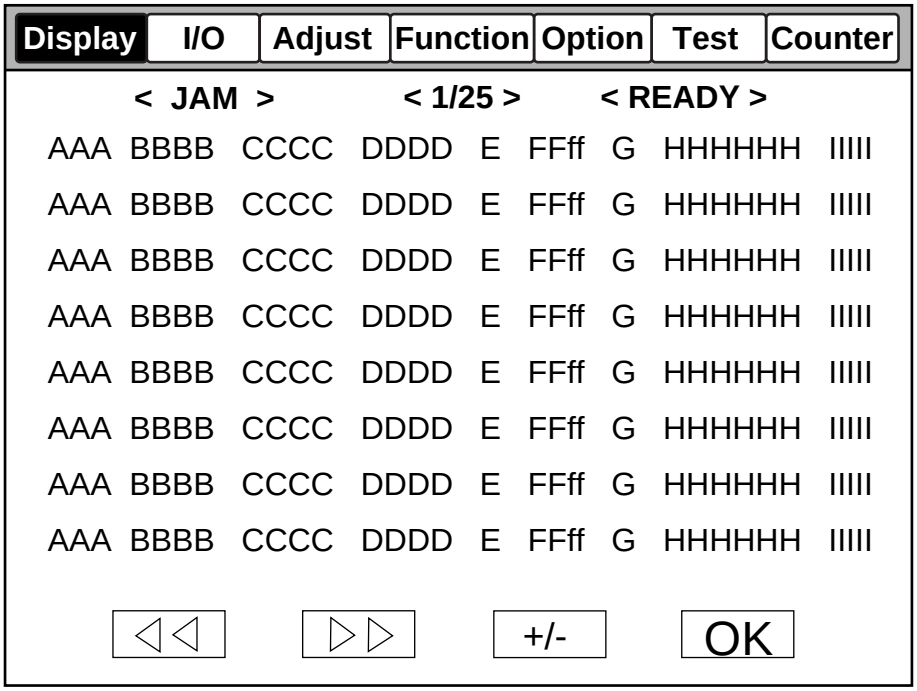

Display
I/O
Adjust
Function
Option
Test
Counter
< JAM >
< 1/25 >
< READY >
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
+/-
OK

Figure 13-B802 Jam Screen

	Description	Remarks
AAA	Indicates the order of jams (the higher the number, the older the jam).	1 to 200 (200 as highest)
BBBB	Indicates the date of a jam.	Month and day (in 2 digits each)
CCCC	Indicates the time of a jam.	In 24-hr notation
DDDD	Indicates jam recovery time.	In 24-hr notation
E	Indicates the location of a jam.	0: copier 1: feeder 2: finisher
FFff	Indicates jam codes.	FF: jam type (Table 13-B801) ff: sensor that detected the jam. • For the copier, see Table 13-B803. • For the feeder or the finisher, see its respective Service
G	Indicates the source of paper.	See Table 13-B802.
HHHHHH	Indicates the soft counter for the source of paper.	
IIIII	Indicates the paper size in question.	

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FF: Type of Jam

Code	Type
01xx	Delay jam
02xx	Stationary jam
03xx	Residual jam at power-on
04xx	Door open jam during copying
05xx	ADF jam during stream reading

Table 13-B801

G: Source of Paper

Code	Description
1	Front deck (right)
2	Front deck (left)
3	Cassette 3
4	Cassette 4
5	Not used
6	Not used
7	Side paper deck
8	Manual feed tray
9	Duplexing assembly

Table 13-B802

ff: Copier Jam Sensors

Code	Jam sensor
xx01	Front deck (right) pickup sensor (PS20)
xx02	Front deck (left) pickup sensor (PS25)
xx03	Cassette 3 pickup sensor (PS37)
xx04	Cassette 4 pickup sensor (PS42)
xx05	Vertical path 1 sensor (PS47)
xx06	Vertical path 2 sensor (PS49)
xx07	Vertical path 3 sensor (PS41)
xx08	Vertical path 4 sensor (PS46)
xx09	Registration sensor (PS5)
xx10	U-turn sensor (PS13)
xx11	Pre-confluence sensor (PS14)
xx12	Post-confluence sensor (PS15)
xx13	Front deck (left) feed sensor (PS26)
xx14	Front deck (right) feed sensor (PS27)
xx15	Side paper deck feed sensor (PS106)
xx16	Manual feed tray feed sensor (PS35)
xx17	Side paper deck pickup sensor (PS101)
xx0A	Fixing separation claw sensor (PS6)
xx0B	Internal delivery sensor (PS9)
xx0C	External delivery sensor (PS10)
xx0D	Fixing/feeding outlet sensor (PS11)
xx0E	Reversal sensor (PS16)
xx0F	Duplexing reversal sensor (PS12)

Table 13-B803

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<ERR>
Indicates error codes.

COPIER>DISPLAY

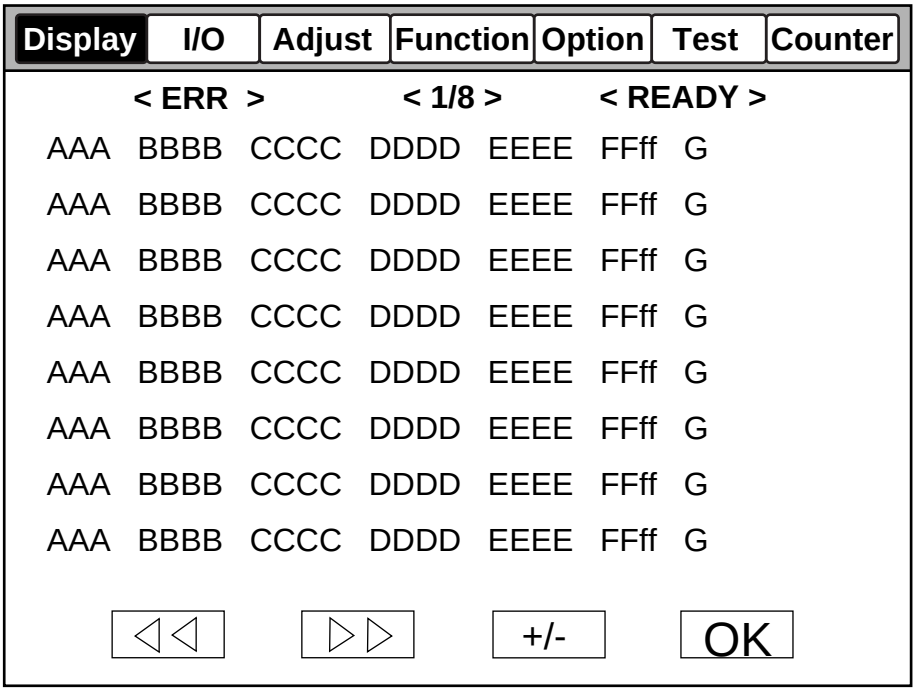


Figure 13-B803

	Description	Remarks
AAA	Indicates the order of errors (the higher the number, the older the error).	1 to 64 (64 as highest)
BBBB	Indicates the date of an error.	Month, day (2 digits each)
CCCC	Indicates the time of an error.	In 24-hr notation
DDDD	Indicates the time of error recovery.	In 24-hr notation
EEEE	Indicates error codes.	See chapter 13>IX the descriptions under "Self Diagnosis."
FFff	Indicates detail codes.	If none, '0000'.
G	Indicates the location of a jam.	0: copier. 1: feeder. 2: finisher.

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<ALRAM1>
Indicates alarm codes.

COPIER>DISPLAY

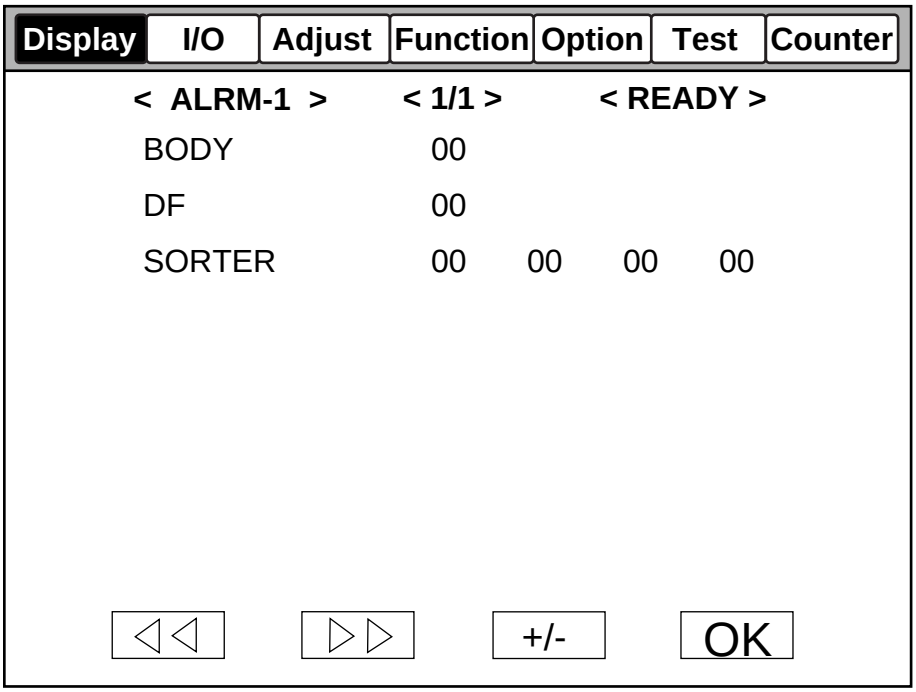


Figure 13-B804

Level 3	Description	Remarks
BODY	Indicates alarms for the copier.	Code / Type 01 Separation charging assembly leakage 02 Feeding fan (FM7) locking 03 De-curling fan (FM6) locking 04 Front deck (right) lifter fault 05 Front deck (left) lifter fault 06 Cassette 3 lifter fault 07 Cassette 4 lifter fault 08 Side paper deck lifter fault
DF	Feeder Alarms • For details of each code, see the Feeder Service Manual.	
SORTER	Finisher Alarms • For details of each code, see the Finisher Service Manual.	00 00 00 00 Tray alarm Stack alarm Stapler alarm (saddle stitcher) Stapler alarm (finisher)

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<HV-STS>
COPIER>DISPLAY
Indicates the voltage/current levels of the high-voltage system.

Level 3	Description	Remarks
PRIMARY	Indicates the level of current (µA) applied to the primary charging wire.	Standard: 1000 (approx.)
PRI-GRID	Indicates the grid level of voltage (V) applied to the primary grid wire.	Reference: 550 to 850
PRI-TR	Indicates the level of current (µA) applied to the pre-transfer charging wire.	
TR	Indicates the level of current (µA) applied to the transfer charging wire.	Reference: 300 to 500
SP	Indicates the level of current (µA) applied to the separation charging wire.	Reference: 350 to 450
BIAS	Indicates the level of voltage of the DC bias (V) applied to the developing cylinder.	Reference: 280 (approx.)

<DPOT>
Indicates the measurement of the surface potential of the photosensitive drum.

Level 3	Description	Remarks
DPOT-K	Indicates the surface potential (V) of the photosensitive drum.	
VL1M	Indicates the light area surface potential (V) of the photosensitive drum.	Reference: 62 to 82
VDM	Indicates the dark area surface potential (V) of the photosensitive drum.	Reference: 432 to 452

<SENSOR>
Indicates the output of the original size sensor.

Level 3	Description	Remarks
DOC-SZ	Indicates the size of an original detected by the original size sensor.	Default sizes
DOC-SZ1	Indicates the output of the original size sensor 1.	1: original present. 0: original absent.
DOC-SZ2	Indicates the output of the original size sensor 2.	
DOC-SZ3	Indicates the output of the original size sensor 3.	
DOC-SZ4	Indicates the output of the original size sensor 4.	

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<MISC>
Indicates other data.

COPIER>DISPLAY

Level 3	Description	Remarks
FL-LIFE	Indicates the activation duty ratio (%) of the scanning lamp.	Indicates the duration of activation in % needed to obtain an optimum light intensity; if new, about 50%. (Around 80%, suspect that the end of life is near.)

<FEEDER>
Indicates data related to the feeder.

FEEDER>DISPLAY

Level 3	Description	Remarks
FEEDSIZE	Indicates the size of an original detected by the feeder.	

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C. I/O Input/Output Display Mode

Figure 13-C801 shows the Level 2 Item screen and the items for I/O mode.

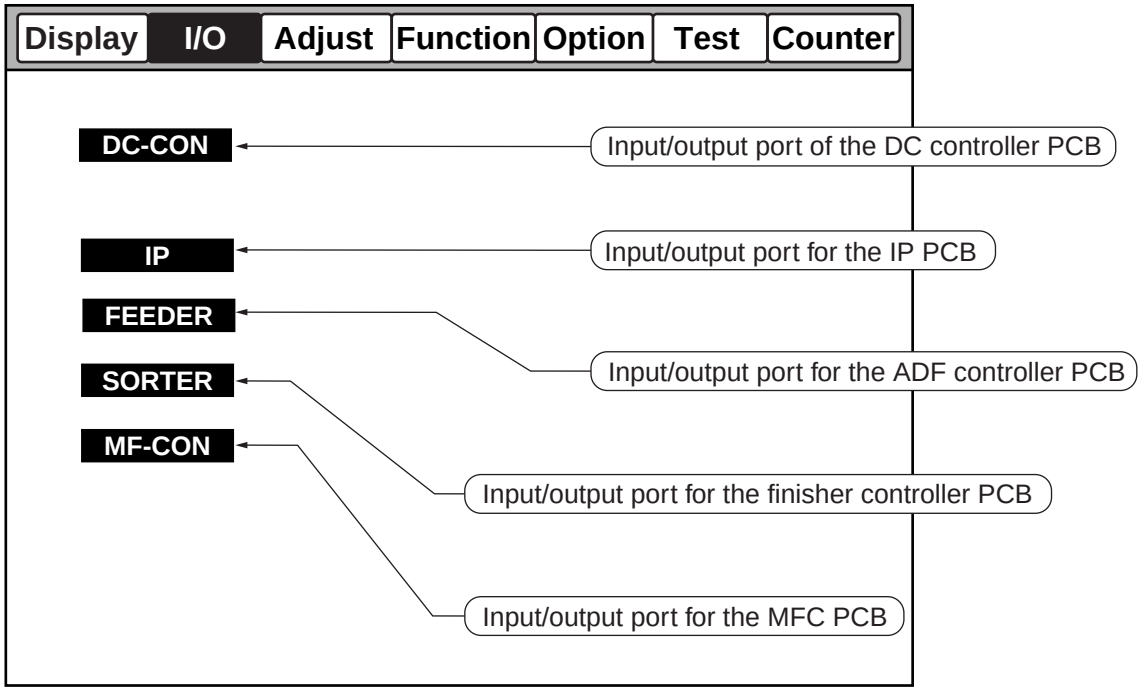


Figure 13-C801 COPIER>I/O

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1. DC-CON

I/O>DC-CON

Address	bit	Description	Signal	Connector	Remarks
P001	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Cassette 3 paper length sensor	C3-LNG0	J513-B4	
	bit5	Cassette 3 paper length sensor	C3-LNG1	J513-B5	
	bit6	Cassette 4 paper length sensor	C4-LNG0	J514-A11	
	bit7	Cassette 4 paper length sensor	C4-LNG1	J514-A12	
P002	bit0	Primary wire cleaner home position	PRWC-HP	J502-A10	0: HP
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Pre-transfer wire cleaner home position	PSTWC-HP	J504-A4	0: HP
	bit5	Not used			
	bit6	Transfer/separation wire cleaner home position	TSWC-HP	J509-A7	0: HP
	bit7	Not used			
P003	bit0	Right deck lifter ON/OFF	RDK-LFT-ON	J514-A4	1: lifter ON
	bit1	Left deck lifter ON/OFF	LDK-LFT-ON	J514-B1	1: lifter ON
	bit2	Cassette 3 lifter ON/OFF	C3-LFT-ON	J516-A4	1: lifter ON
	bit3	Cassette 4 lifter ON/OFF	C4-LFT-ON	J516-B1	1: lifter ON
	bit4	Not used			
	bit5	Not used			
	bit6	SLAVE-PRDV	—	CPU	0: RDY
	bit7	Not used			
P004	bit0	Primary wire cleaner drive	PRWC-RV	J502-A7	1: to rear
	bit1	Primary wire cleaner drive	PRWC-FW	J502-A8	1: to front
	bit2	Not used			
	bit3	Not used			
	bit4	Pre-transfer wire cleaner drive	PSTWC-FW	J504-A8	1: to front
	bit5	Pre-transfer wire cleaner drive	PSTWC-RV	J504-A9	1: to rear
	bit6	Transfer/separation wire cleaner drive	TSWC-RV	J509-B4	1: to rear
	bit7	Transfer/separation wire cleaner drive	TSWC-FW	J509-B5	1: to front

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Address	bit	Description	Signal	Connector	Remarks
P005	bit0	Scanner motor drive data	OPT-D0	J506-A3	—
	bit1	Scanner motor drive data	OPT-D1	J506-A4	—
	bit2	Scanner motor drive data	OPT-D2	J506-A5	—
	bit3	Scanner motor drive data	OPT-D3	J506-A6	—
	bit4	Scanner motor current level data	OPT-CD0	J506-A9	—
	bit5	Scanner motor current level data	OPT-CD1	J506-A10	—
	bit6	Scanner motor current level data	OPT-CD2	J506-A11	—
	bit7	Not used			
P006	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Scanner motor rotation direction	OPT-CCW	J506-A8	1: scanner forward
	bit4	Scanner motor ON	OPT-CLK	J506-A12	1: ON
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P007	bit0	Right deck lifter sensor	RDK-LFT-DT	J511-A6	1: upper limit
	bit1	Left deck lifter sensor	LDK-LFT-DT	J518-A2	1: upper limit
	bit2	Cassette 3 lifter sensor	C3-LFT-DT	J515-A6	1: upper limit
	bit3	Cassette 4 lifter sensor	C4-LFT-DT	J517-A6	1: upper limit
	bit4	Right deck open	RDK-OPN	J511-B5	0: open
	bit5	Left deck open	LDK-OPN	J518-B2	0: open
	bit6	Cassette 3 open	C3-OPN	J515-B5	0: open
	bit7	Cassette 4 open	C4-OPN	J517-B5	0: open
P008	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Right deck paper	RDK-PDT	J511-A9	1: paper present
	bit5	Left deck paper	LDK-PDT	J518-A5	1: paper present
	bit6	Cassette 3 paper	C3-PDT	J515-A9	1: paper present
	bit7	Cassette 4 paper	C4-PDT	J517-A9	1: paper present

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Address	bit	Description	Signal	Connector	Remarks
P009	bit0	Not used			
	bit1	Right deck paper level data 1	RDK-PRM1	J513-B9	1: paper present
	bit2	Right deck paper level data 2	RDK-PRM2	J513-B12	1: paper present
	bit3	Right deck lifter limit	RDK-LFT-LMT	J511-B8	1: upper limit
	bit4	Not used			
	bit5	Left deck paper level data 1	LDK-PRM1	J514-B9	1: paper present
	bit6	Left deck paper level data 2	LDK-PRM2	J514-B12	1: paper present
	bit7	Left deck lifter limit	RDK-LFT-LMT	J518-B5	1: upper limit

2. IP

Address	bit	Description	Signal	Connector	Remarks
P001	bit0	Manual feed tray paper sensor	MLT-PAPE-PS	J510-B8	1: paper present
	bit1	Registration paper sensor	PS5S	J509-A2	1: paper present
	bit2	Right deck pickup sensor	PS20S	J511-B2	1: paper present
	bit3	Cassette 3 paper sensor	PS39S	J515-A9	1: paper present
	bit4	Vertical path 3 paper sensor	PS41S	J515-B8	1: paper present
	bit5	Cassette 4 paper sensor	PS44S	J517-A9	1: paper present
	bit6	Vertical path 4 paper sensor	PS46S	J517-B8	1: paper present
	bit7	Right deck paper sensor	PS22S	J511-A9	1: paper present
	bit8	Pre-registration paper sensor	PS47S	J502-B5	1: paper present
	bit9	Left deck paper sensor	PS32S	J518-A5	1: paper present
	bit10	Vertical path 2 paper sensor	PS49S	J516-B9	1: paper present
	bit11	External delivery sensor	PS10S	J508-A8	1: paper present
	bit12	Internal delivery sensor	PS9S	J508-A2	1: paper present
	bit13	Fixing/feeding outlet sensor	PS11S	J508-A11	1: paper present
	bit14	Fixing claw jam sensor	PS6S	J508-B15	1: paper present
	bit15	Left deck feed sensor	PS26S	J519-B10	1: paper present

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Address	bit	Description	Signal	Connector	Remarks
P002	bit0	Cassette 3 pickup sensor	PS37S	J515-B2	1: paper present
	bit1	Cassette 4 pickup sensor	PS42S	J517-B2	1: paper present
	bit2	Left deck pickup sensor	PS25S	J518-A8	1: paper present
	bit3	Duplexing reversal sensor	PS12S	J519-B6	1: paper present
	bit4	U-turn sensor	PS13S	J519-B7	1: paper present
	bit5	Pre-confluence sensor	PS14S	J519-B8	1: paper present
	bit6	Post-confluence sensor	PS15S	J519-B9	1: paper present
	bit7	Reversal sensor	PS16S	J508-A5	1: paper present
	bit8	Waste toner case full sensor	PS19S	J514-A2	1: full
	bit9	Hopper toner sensor 1	TS1S	J504-B8	0: toner absent
	bit10	Hopper toner sensor 2	TS2S	J504-B11	0: toner absent
	bit11	Developing assembly toner sensor	TS3S	J504-B16	0: toner absent
	bit12	Fixing cleaning belt sensor	PS7S	J508-B2	1: belt absent
	bit13	Fixing cleaning belt warning sensor	PS8S	J508-B5	1: warning
	bit14	Cartridge detecting switch	MSW1S	J512-B7	0: cartridge present
	bit15	Waste toner clog detecting switch	MSW2S	J512-B14	0: clogged
P003	bit0	Original size sensor 1	SIZE1	J503-B2	0: original present
	bit1	Original size sensor 2	SIZE2	J503-B5	0: original present
	bit2	Original size sensor 3	SIZE3	J504-B2	0: original present
	bit3	Original size sensor 4	SIZE4	J504-B5	0: original present
	bit4	Copyboard cover open/closed sensor	PS4S	J507-B9	1: closed
	bit5	Pre-transfer charging wire cleaner detecting switch	MSW3S	J504-A4	0: home position
	bit6	Primary charging wire detecting switch	MSW4S	J502-A10	0: home position
	bit7	Transfer separation charging wire cleaner detecting switch	MSW6S	J509-A7	0: home position
	bit8	Cartridge door open/closed sensor	PS59S	J512-B2	1: closed
	bit9	Right cover (upper) open/ closed sensor	PS58S	J502-B2	1: closed
	bit10	Not used			
	bit11	Right door closed/open sensor	PS23S	J511-B5	1: closed
	bit12	Left door closed/open sensor	PS33S	J518-B2	1: closed

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Address	bit	Description	Signal	Connector	Remarks
P003	bit13	Right cover (lower) open/ closed sensor	PS48S	J516-A2	1: closed
	bit14	Manual feed cover open/closed sensor	PS56S	J502-A2	1: closed
	bit15	Front cover open/closed detecting switch	MSW7S	J502-B17	0: closed
P004	bit0	Through path tray detection	TPCNCT	J519-B12	0: present
	bit1	Fixing/feeding releasing lever sensor	PS28S	J509-B9	1: released
	bit2	Not used			
	bit3	Cassette 3 open/closed sensor	PS40S	J515-B5	1: closed
	bit4	Cassette 4 open/closed sensor	PS45S	J517-B5	1: closed
	bit5	Not used			
	bit6	Multifeeder de-curling sensor	PS35S	J510-B2	1: paper present
	bit7	Not used			
	bit8	Fixing sub thermistor error detection	—	CPU	1: error (E001-2)
	bit9	Not used			
	bit10	Fixing main thermistor error detection	—	CPU	1: error (E001-1)
	bit11	Fluorescent lamp absent detection	—	CPU	1: error (E220)
	bit12	Not used			
	bit13	Main SSR error detection	—	CPU	1: short circuit (E004-1)
	bit14	Sub SSR error detection	—	CPU	1: short circuit (E004-2)
	bit15	Main switch shut-off open circuit detection	—	CPU	0: normal
P005	bit0	Primary charging assembly cleaning fan stop detection	FM1LCK	J504-A13	1: stopped
	bit1	Fixing delivery fan stop detection	FM2LCK	J503-A4	1: stopped
	bit2	Scanner cooling fan stop detection	FM3LCK	J504-A10	1: stopped
	bit3	Fan stop detection	FM4LCK	J502-A4	1: stopped
	bit4	Laser driver cooling fan stop detection	FM5LCK	J503-A1	1: stopped
	bit5	De-curling fan stop detection	FM6LCK	J509-B11	1: stopped
	bit6	Feeding fan stop detection	FM7LCK	J509-A8	1: stopped

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Address	bit	Description	Signal	Connector	Remarks
P005	bit7	Drum fan stop detection	FM8LCK	J512-A8	1: stopped
	bit8	Inverter cooling fan stop detection	FM9LCK	J507-A7	1: stopped
	bit9	Pre-transfer charging assembly fan stop detection	FM10LCK	J504-A5	1: stopped
	bit10	Power supply cooling fan 1 stop detection	FM11LCK	J505-B1	1: stopped
	bit11	Power supply cooling fan 2 stop detection	FM12LCK	J505-B4	1: stopped
	bit12	Separation fan stop detection	FM13LCK	J509-A11	1: stopped
	bit13	Laser scanner fan stop detection	FM14LCK	J504-A16	1: stopped
	bit14	Not used			
	bit15	Not used			
P006	bit0	Drum motor lock detection	M0LCK	J512-B9	0: low-speed
	bit1	Laser scanner motor lock detection	M4LCK	J503-A8	0: low-speed
	bit2	Fixing drive motor lock detection	M3LCK	J508-A17	
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Fluorescent lamp detection	—	CPU	1: ON
	bit8	Not used			
	bit9	Scanner home position detection	PS1S	J507-A1	1: home position
	bit10	Not used			
	bit11	Slave power ready detection	—	CPU	0: ready
	bit12	Not used			
	bit13	CC-V connect signal	CC5-CONNECT	J503-A14	0: CC-V present
	bit14	Power supply control detection	—	CPU	0: power ON
	bit15	Not used			

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Address	bit	Description	Signal	Connector	Remarks
P007	bit0	Overcurrent detection (24 V)	24ERR	J505-B10	1: overcurrent
	bit1	Overcurrent detection (38 V)	38ERR	J505-B11	1: overcurrent
	bit2	Primary charging error detection	PR-ERR	J510-A4	1: error
	bit3	Transfer charging error detection	TR-ERR	J510-A7	1: error
	bit4	Separation/pre-transfer charging error detection	POST-ERR	J510-A13	1: error
	bit5	Hopper motor error detection	—	CPU	1: error (E020)
	bit6	Cartridge motor error detection	—	CPU	1: error (E025)
	bit7	Not used			
	bit8	Options counter switch bit 0	OP-bit1	J503-B8	DIOSW0
	bit9	Options counter switch bit 1	OP-bit2	J503-B9	DIOSW1
	bit10	Counter open circuit detection 1 (total)	—	CPU	1: open circuit (E030)
	bit11	Counter open circuit 2 (option)	—	CPU	1: open circuit (E031)
	bit12	Counter open circuit detection 3	—	CPU	1: open circuit
	bit13	Not used			
	bit14	Not used			
	bit15	Right deck feed sensor	PS27S	J511-B11	1: paper
P008	bit0	Manual feed tray pickup clutch	CL7D	J513-A9	1: ON
	bit1	Cassette 3 pickup clutch	CL12D	J515-A2	1: ON
	bit2	Vertical path 3 clutch	CL13D	J515-A4	1: ON
	bit3	Cassette 4 pickup clutch	CL14D	J517-A2	1: ON
	bit4	Vertical path 4 clutch	CL15D	J517-A4	1: ON
	bit5	Right deck pickup clutch	CL10D	J511-A2	1: ON
	bit6	Vertical path 1 clutch	CL8D	J511-A4	1: ON
	bit7	Left deck pickup clutch	CL11D	J518-B8	1: ON
	bit8	Vertical path 2 clutch	CL9D	J514-A7	1: ON
	bit9	Pre-registration clutch	CL5D	J513-A12	1: ON
	bit10	Lower feeding middle clutch	CL16D	J519-B4	1: ON
	bit11	Lower feeding right clutch	CL17D	J519-B3	1: ON
	bit12	Left deck feed clutch	CL19D	J519-B2	1: ON
	bit13	Delivery speed switching clutch	CL21D	J508-A14	1: high-speed 0: normal speed
	bit14	Registration brake clutch	CL3D	J509-B7	1: ON
	bit15	Multifeeder feed clutch	CL18D	J513-A7	1: ON

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Address	bit	Description	Signal	Connector	Remarks
P009	bit0	Hopper clutch	CL1D	J504-B14	1: ON
	bit1	Developing clutch	CL4D	J512-A12	1: ON
	bit2	Not used			
	bit3	Right deck pickup solenoid	SL7D	J511-A12	1: ON
	bit4	Left deck pickup solenoid	SL8D	J518-B10	1: ON
	bit5	Cassette 3 pickup solenoid	SL9D	J515-B11	1: ON
	bit6	Cassette 4 pickup solenoid	SL10D	J517-B11	1: ON
	bit7	Multifeeder pickup latch solenoid (return)	SL6R	J510-B12	1: ON
	bit8	Multifeeder latch solenoid (pull)	SL6P	J510-B11	1: ON
	bit9	Delivery flapper solenoid	SL3D	J508-B18	1: ON
	bit10	Reversing flapper solenoid	SL11D	J519-B5	1: ON
	bit11	Fixing inlet guide solenoid (return)	SL1R	J508-B13	1: ON
	bit12	Fixing inlet guide solenoid (pull)	SL1P	J508-B12	1: ON
	bit13	Fixing cleaning belt solenoid	SL2D	J508-B20	1: ON
	bit14	Fixing/feeding unit locking solenoid (return)	SL4R	J509-B3	1: ON
	bit15	Fixing/feeding unit locking solenoid (pull)	SL4P	J509-B2	1: ON
P010	bit0	Inverter cooling fan (full speed)	FM9D	J507-A9	1: ON
	bit1	Inverter cooling fan (full speed)	FM9D	J507-A9	1: ON
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Transfer guide bias ON/OFF	FGD-ON	J510-A15	0: ON
	bit7	Transfer guide bias switch	FGD-CNT	J510-A16	0: 200V, 1: 600V
P011	bit0	Drum motor drive	MOD	J512-B10	0: ON
	bit1	Main motor drive	MM-ON	J514-B5	0: ON
	bit2	Pickup motor drive	M2-ON	J513-A3	0: ON
	bit3	Fixing motor drive	FXM-ON	J508-A18	0: ON
	bit4	Laser scanner motor drive	LM-ON	J503-A9	0: ON
	bit5	Cartridge motor drive	CRGM-ON	J512-B4	1: ON
	bit6	Hopper motor drive	HM-ON	J504-B18	1: ON
	bit7	Laser scanner motor switch	SP-SEL	J503-A7	0: high-speed

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Address	bit	Description	Signal	Connector	Remarks
P012	bit0	Waste toner case full detection reset	—	CPU	0: reset
	bit1	Cassette/drum heater ON/OFF	CST-HTR-ON	J505-A8	0: ON
	bit2	Fluorescent lamp pre-heater ON/OFF	PRH-ON	J506-B9	0: ON
	bit3	Fluorescent lamp heater ON/OFF	HEAT-ON	J506-B2	0: ON
	bit4	Fixing main heater ON/OFF	MH-ON	J505-A10	1: ON
	bit5	Fixing sub heater ON/OFF	SH-ON	J505-A11	1: ON
	bit6	Drum heater full-wave/half-wave	D-HTR-ON	J505-A6	1: full-wave, 0: half-wave
	bit7	Not used			
P013	bit0	Power supply fan 1/2 full-speed	FM11D/12D	J505-B3/B6	1: ON(24V)
	bit1	Power supply fan 1/2 half-speed	FM11D/12D	J505-B3/B6	1: ON(12V)
	bit2	Separation fan full-speed	FM13D	J509-A13	1: ON(24V)
	bit3	Separation fan half-speed	FM13D	J509-A13	1: ON(12V)
	bit4	Laser scanner fan full-speed	FM14D	J504-A18	1: ON(24V)
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P014	bit0	Feeding fan full-speed	FM7D	J509-A10	1: ON(24V)
	bit1	Feeding fan half-speed	FM7D	J509-A10	1: ON(12V)
	bit2	Drum fan full-speed	FM8D	J512-A10	1: ON(24V)
	bit3	Drum fan half-speed	FM8D	J512-A10	1: ON(12V)
	bit4	De-curling fan full-speed	FM6D	J509-B13	1: ON
	bit5	Not used			
	bit6	Pre-transfer charging assembly fan full-speed	FM10D	J504-A7	1: ON(24V)
	bit7	Pre-transfer charging assembly fan half-speed	FM10D	J504-A7	1: ON(12V)

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Address	bit	Description	Signal	Connector	Remarks
P015	bit0	Primary charging assembly fan full-speed	FM1D	J504-A15	1: ON(24V)
	bit1	Primary charging assembly fan half-speed	FM1D	J504-A15	1: ON(12V)
	bit2	Fixing assembly heat discharge fan full-speed	FM2D	J503-A6	1: ON(24V)
	bit3	Fixing assembly heat discharge fan half-speed	FM2D	J503-A6	1: ON(18V)
	bit4	Scanner stream reading fan full-speed	FM3D/4D	J504-A12 J502-A6	1: ON(24V)
	bit5	Scanner stream reading fan half-speed	FM3D/4D	J504-A12 J502-A6	1: ON(12V)
	bit6	Laser driver cooling fan full-speed	FM5D	J503-A3	1: ON
	bit7	Not used			
P016	bit0	Copier/ADF image leading edge select	—	CPU	1: copier, 0: ADF-Y
	bit1	Not used			
	bit2	Shut-off	SW-OFF	J512-A14	1: main switch
	bit3	Power off	—	CPU	1: ON
	bit4	Original size detection ON/OFF	—	CPU	1: ON
	bit5	CCV count	CC5-CNT	J503-A15	1: count
	bit6	CCX count	CCX-CNT	J521-6	1: count
	bit7	Scan start	—	CPU	1: start
P017	bit0	Fluorescent lamp ON/OFF	FLON	J506-B11	0: ON
	bit1	Counter 1 (total)	CNT1D	J503-B13	1: count
	bit2	Counter 2 (options)	CNT2D	J503-B11	1: count
	bit3	Counter 3 (print)	CNT3D	J503-B15	1: count
	bit4	Not used			
	bit5	Not used			
	bit6	Pre-exposure lamp ON/OFF	PEX-ON	J504-A1	1: ON
	bit7	Not used			

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Address	bit	Description	Signal	Connector	Remarks
P018	bit0	Potential sensor ON/OFF	POT-ON	J502-A12	1: ON
	bit1	Not used			
	bit2	Not used			
	bit3	HVT DC component ON/OFF	HVDC-EN	J510-A2	0: high-voltage output ON
	bit4	HVT developing AC component ON/OFF	DEV-AC-ON	J510-A8	0: ON
	bit5	Not used			
	bit6	HVT pre-transfer AC/ separation AC component ON/ OFF	HVAC-EN	J510-A10	0: ON
	bit7	Not used			
P019	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P020	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P021	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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Address	bit	Description	Signal	Connector	Remarks
P022	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P023	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P024	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P025	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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3. FEEDER

I/O>FEEDER

Address	bit	Description	Signal	Connector	Remarks
P001	bit0	Pre-reversing solenoid	SL3D*	J10-2	0: ON
	bit1	Not used			
	bit2	Reversing solenoid	SL1D*	J9-2	1: ON
	bit3	Delivery solenoid (position 1)	SL4D1*	J2-2	1: ON
	bit4	Delivery solenoid (position 2)	SL4D2*	J2-3	1: ON
	bit5	Stopper plate solenoid (position 1)	SL2D1*	J9-4	1: ON
	bit6	Stopper plate solenoid (position 2)	SL2D2*	J9-5	1: ON
	bit7	Solenoid timer	SLTMR	CPU	1: ON
P002	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Pickup roller home position sensor	PKHP	J14-A5	1: home position
	bit5	Pickup roller height sensor 2	PKH2	J14-A8	1: original present
	bit6	Pickup roller height sensor 1	PKH1	J14-A11	1: original present
	bit7	Pre-reversal sensor	PRTR	J12-12	1: original present
P003	bit0	Not used			
	bit1	Original sensor LED	DTLED	J5-15	0: ON
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

*Checks not possible because of data processing speed.

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Address	bit	Description	Signal	Connector	Remarks
P004	bit0	Separation sensor	SPS	J13-10	0: original present
	bit1	Separation sheet-to-sheet distance clock	TRNA_X	CPU	alternately '0' and '1' *
	bit2	Belt motor encoder	BTCLK	J12-3	alternately '0' and '1' *
	bit3	Post-registration roller paper sensor	RGAS	J13-6	0: original present
	bit4	Manual feed registration roller paper sensor	MFRGS	J2-6	0: original present
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P005	bit0	Tx (transmission)	SERIAL_DO	CPU	1: transmit
	bit1	Da load	DAC_LD	CPU	1: transmit
	bit2	Rx (reception)	SERIAL_DI	CPU	1: reception
	bit3	EEPROM chip select	EEP_CS	CPU	0: EEPROM select
	bit4	Serial reference clock	SERIAL_CLK	CPU	alternately '0' and '1' *
	bit5	Separation motor encoder	SPCLK	J12-5	alternately '0' and '1' *
	bit6	Not used			
	bit7	Not used			
P006	bit0	Belt motor mode 1	BLTMO1	CPU	'0' at all times
	bit1	Belt motor mode 2	BLTMO2	CPU	'0' at all times
	bit2	Belt motor reference clock	REF-CLK	J7-1	alternately '0' and '1' *
	bit3	Belt motor CW/CCW	CW/CCW	J7-4	0: delivery direction
	bit4	Separation motor PWM	SPPWM	CPU	alternately '0' and '1' *
	bit5	Reversal motor layer B	TANB	CPU	alternately '0' and '1' *
	bit6	Delivery motor PWM	EJPWM	CPU	alternately '0' and '1' *
	bit7	Reversal motor layer A	TANA	CPU	alternately '0' and '1' *

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I/O>FEEDER

Address	bit	Description	Signal	Connector	Remarks
P007	bit0	Image leading edge signal	ITOP-F	CPU	1: at edge
	bit1	Pre-registration roller paper sensor	RGBS	J13-4	1: original present
	bit2	Separation motor reference clock	SEPCLKPEF	CPU	alternately '0' and '1' *
	bit3	Delivery motor encoder	EJCLK	J13-2	alternately '0' and '1' *
	bit4	Pickup motor layer A	PICKA	CPU	alternately '0' and '1' *
	bit5	Pickup motor layer B	PICKB	CPU	alternately '0' and '1' *
	bit6	Pickup motor hold	PICKHOLB	CPU	1: output present
	bit7	AD trigger	ADTRG	CPU	1: output present
P008	bit0	Not used			
	bit1	Separation clutch	CLD	J10-4	
	bit2	Skew sensor	SKS	J13-12	1: original present
	bit3	Original delivery sensor	EJJAM	J2-15	1: original present
	bit4	Manual feed cassette sensor	MFST	J2-10	1: original present
	bit5	Not used			
	bit6	Reversal sensor	TNS	J14-B3	1: output present
	bit7	Registration roller clock	TRCLK	J10-B10	alternately '0' and '1' *
P009	bit0	DIP switch 1	DIPSW1	CPU	0: ON
	bit1	DIP switch 2	DIPSW2	CPU	0: ON
	bit2	DIP switch 3	DIPSW3	CPU	0: ON
	bit3	DIP switch 4	DIPSW4	CPU	0: ON
	bit4	DIP switch 5	DIPSW5	CPU	0: ON
	bit5	DIP switch 6	DIPSW6	CPU	0: ON
	bit6	Left cover sensor (front)	LCVF	J14-B7	1: closed
	bit7	Left cover sensor (rear)	LCVR	J12-9	1: closed

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I/O>FEEDER

Address	bit	Description	Signal	Connector	Remarks
P010	bit0	7-segment LED0	7SEG_D	CPU	0: ON
	bit1	7-segment LED1	7SEG_E	CPU	0: ON
	bit2	7-segment LED2	7SEG_C	CPU	0: ON
	bit3	7-segment LED3	7SEG_G	CPU	0: ON
	bit4	7-segment LED4	7SEG_B	CPU	0: ON
	bit5	7-segment LED5	7SEG_F	CPU	0: ON
	bit6	7-segment LED6	7SEG_A	CPU	0: ON
	bit7	ADF open/closed sensor	RFOP	J12-15	1: closed
P011	bit0	Slide switch 0	SSW-0	J51-5	1: ON
	bit1	Slide switch 1	SSW-1	J51-4	1: ON
	bit2	Slide switch 2	SSW-2	J51-3	1: ON
	bit3	Slide switch 3	SSW-3	J51-2	1: ON
	bit4	Slide switch 4	SSW-4	J51-6	1: ON
	bit5	Push switch 1	PSHSW-1	CPU	0: ON
	bit6	Push switch 2	PSHSW-2	CPU	0: ON
	bit7	Push switch 3	PSHSW-3	CPU	0: ON
P012	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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4. SORTER

I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P001	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Upper path switching solenoid (SL2) ON	UPSCHG	J119-2	0: ON
	bit5	Inlet path paper sensor PCB (S1)	ENTPCB	J121-B3	1: paper present
	bit6	Delivery motor current switch	—	CPU	1: constant speed, 0: acceleration
	bit7	Puncher feeding path detection	—	CP106	
P002	bit0	Master CPU (IC101) busy signal	—	CPU	0: busy
	bit1	Slave CPU (IC121) reset	—	CPU	0: reset
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P003	bit0	Not used			
	bit1	Lower path paper sensor (S3) detection	LWRPPCB	J120-B8	1: paper absent, 0: paper present
	bit2	Not used			
	bit3	Not used			
	bit4	Shutter home position detection		J107-3	0: HP
	bit5	Rear jogging plate home position (PI7) detection	RJOGHP	J104-B9	1: HP
	bit6	Front jogging plate home position (PI9) detection	FJOGHP	J104-B3	1: HP
	bit7	Tray auxiliary plate retraction detection	SPTTRYIN	J105-B6	1: HP

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I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P004	bit0	Swing motor FG	—	CP104	
	bit1	Buffer path rear sensor (PI3)	—	CP120A-7	0: paper present
	bit2	Inserter drive motor FG	—	IC145-2	
	bit3	Not used			
	bit4	Sort delivery sensor (PI4)	STDLV	J120-B3	1: paper present
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P005	bit0	EEROM serial output	—	IC102-3	—
	bit1	EEROM load signal	—	IC102-1	0: CS
	bit2	EEROM serial input	—	IC102-4	—
	bit3	24 VR down detection	—	J101-1	1: down
	bit4	Not used			
	bit5	Delivery motor FG		IC128-9	
	bit6	Not used			
	bit7	Not used			
P006	bit0	Buffer motor (M2) A	BUFMA	J122-A5	alternately '0' and '1'
	bit1	Buffer motor (M2) B	BUFMB	J122-A4	alternately '0' and '1'
	bit2	Buffer motor (M2) A*	BUFMA*	J122-A3	alternately '0' and '1'
	bit3	Buffer motor B*	BUFMB*	J122-A2	alternately '0' and '1'
	bit4	Delivery motor (M3) A/A*	EJCMA	J122-B5	alternately '0' and '1'
	bit5	Delivery motor (M3) B/B*	EJCMB	J122-B4	alternately '0' and '1'
	bit6	Inlet motor (M1) clock	INPASSMCLK	J124-4	alternately '0' and '1'
	bit7	Delivery motor (M3) ON*	EJCMHLD	J122-B6	1: OFF, 0: ON

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I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P007	bit0	Not used			
	bit1	Not used			
	bit2	Stack delivery motor (M7) PMW*	—	—	1: OFF, 0: ON
	bit3	Stack delivery motor (M7) CCW*	—	—	1: CW, 0: CCW
	bit4	Stack delivery motor (M7) CW*	—	—	1: CCW, 0: CW
	bit5	Inlet motor (M1) ON	INPASSMON*	J124-7	0: ON
	bit6	Inlet motor (M1) CW*/CCW	INPASSMCW*	J124-6	1: CCW, 0: CW
	bit7	Inlet motor (M1) brake	INPASSMBRK	J124-5	1: braked
P008	bit0	Buffer path switching solenoid (SL1) ON	BFPSSCHG*	J120-A2	1: wrapped, 0: released
	bit1	Not used			
	bit2	Inlet motor (M1) lock signal	INPASSMLOCK	J124-3	0: lock
	bit3	Non-sort delivery sensor (PI6) detection	NSTDLV	J119-5	1: paper present
	bit4	Stack delivery motor (M7) lock detection	—	—	0: lock
	bit5	Lower path paper sensor	BFPSSXIT	J120-A9	1: paper present
	bit6	Not used			
	bit7	Not used			
P009	bit0	Staple detecting switch (MSW3) detection	HOOKEMP	J111-9	1: staple absent
	bit1	Cartridge switch (MSW4) detection	CRTSET	J111-10	1: absent, 0: present
	bit2	Staple edging (PI18) detection	SLFPRIM	J111-13	0: edging
	bit3	Stacking tray proximity detection		J116-3	0: ON
	bit4	Folding feeding path 1 detection		J125-A3	1: paper present
	bit5	Folding feeding path 2 detection		J125-A2	1: paper present
	bit6	Folding feeding path 3 detection		J125-B9	1: paper present
	bit7	Folding feeding path 4 detection		J125-B8	1: paper present

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I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P010	bit0	Inserter cover open/closed detection		J117-A1	1: open
	bit1	Tray safety switch (front, MSW6)/tray safety switch (rear, MSW7) detection	—	J114-1	1: OFF
	bit2	Inserter unit detection	—	J117-A8	0: present
	bit3	Punching unit detection	—	J118-B3	0: present
	bit4	Z-folding unit detection	—	J125-A1	0: present
	bit5	Saddle unit detection	—	J102-B7	0: Present
	bit6	Stapler safety switch (front, MSW8)/stapler safety switch (rear, MSW9)/swing guide safety switch (MSW2)	—	J113-1	0: OFF
	bit7	Fan (FM1) rotation error detection	FANSTP	J103-7	1: error, 0: normal
P011	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Swing (M8) motor ON	—	CPU	1: OFF, 0: ON
	bit4	Power supply fan (FM1) ON signal	FANON	J103-8	1: ON, 0: OFF
	bit5	Buffer motor (M2) ON signal	BUFMHLD	J122-A6	1: OFF, 0: ON
	bit6	Buffer motor (M2) current switching	—	CPU	1: constant speed, 0: acceleration
	bit7	Not used			
P012	bit0	Front jogging plate motor (M4) A	FJOGMA/ FJOGMA*	J104-A5/-A3	alternately '0' and '1'
	bit1	Front jogging plate motor (M4) B	FJOGMB/ FJOGMB*	J104-A4/-A2	alternately '0' and '1'
	bit2	Front jogging plate motor (M4) hold	—	CPU	1: stop
	bit3	Knurled belt solenoid (SL3)	FDBLT*	J120-B5	0: wait
	bit4	Rear jogging plate motor (M5) A	RJOGMA/ RJOGMA*	J104-A10/-A8	alternately '0' and '1'
	bit5	Rear jogging plate motor (M5) B	RJOGMB/ RJOGMB*	J104-A9/-A7	alternately '0' and '1'
	bit6	Rear jogging plate motor (M5) hold	—	CPU	1: stop
	bit7	Not used			

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Address	bit	Description	Signal	Connector	Remarks
P013	bit0	Tray auxiliary plate motor (M6) A	SPTTRYMA/ SPTTRYMA*	J105-A9/-A7	alternately '0' and '1'
	bit1	Tray auxiliary plate motor (M6) B	SPTTRYMB/ SPTTRYMB*	J105-A8/-A6	alternately '0' and '1'
	bit2	Tray auxiliary plate motor (M6) hold	—	CPU	1: stop
	bit3	Not used			
	bit4	Paddle motor (M9) A	STPMVMA/ STPMVMA*	J108-A5/-A3	alternately '0' and '1'
	bit5	Paddle motor (M9) B	STPMVMB/ STPMVMB*	J108-A4/-A2	alternately '0' and '1'
	bit6	Paddle motor (M9) ON signal*	—	CPU	1: stop
	bit7	Paddle motor (M9) current switching	—	CPU	1: low-speed, 0: acceleration
P014	bit0	Paddle home position (PI14) detection	PDLHP	J108-A8	0: HP
	bit1	Z-folding unit upper cover detection	—	J125-B3	1: closed
	bit2	Inserter open detection	—	J117-A9	1: closed
	bit3	Front cover open sensor (PI1) detection	FDROPN	J121-B6	1: closed
	bit4	Upper cover open sensor (PI5) detection	UPCVROPN	J119-8	1: closed
	bit5	Z-folding path set detection	—	J125-B6	1: present
	bit6	Z-folding path 1 paper level detection	—	J125-B7	1: paper present
	bit7	Saddle inlet front path sensor	—	J123-5	1: paper present
P015	bit0	Puncher waste paper feeder motor ON	—	J118-B10	1: ON
	bit1	Stacker sub tray solenoid ON		J110-B12 J110-B13	
	bit2	Not used			
	bit3	Inlet motor (M10) gain adjustment	M1ADJ	J124-1	1: high-speed, 0: low-speed
	bit4	Not used			
	bit5	Saddle path flapper solenoid ON		J123-2	0: ON
	bit6	Inserter drive motor ON		J117-B9	1: ON
	bit7	Not used			

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Address	bit	Description	Signal	Connector	Remarks
P016	bit0	Inserter feeding path 1 detection		J117-A6	1: paper present
	bit1	Inserter feeding path 2 detection		J117-A7	1: paper present
	bit2	Inserter feeding path 3 detection		J117-A8	1: paper present
	bit3	Tray B paper detection (PI22)	STTRYPA	J110-B7	1: paper present
	bit4	Sample tray paper detection		J115-B10	1: paper present
	bit5	Swing guide closed detection (PI15)	SWDGDCL	J108-B3	0: close
	bit6	Swing guide open detection (PI16)	SWORN	J108-B6	1: open
	bit7	Stack delivery sensor (PI8) detection	BNDLDELV	J104-B6	1: paper present
P017	bit0	DUST-BOX-SET			1: set
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Sample tray detection			1: present, 0: absent
P018	bit0	SW103-1	—	SW103-1	0: ON
	bit1	SW103-2	—	SW103-2	0: ON
	bit2	SW103-3	—	SW103-3	0: ON
	bit3	SW103-4	—	SW103-4	0: ON
	bit4	SW103-5	—	SW103-5	0: ON
	bit5	SW103-6	—	SW103-6	0: ON
	bit6	SW103-7	—	SW103-7	0: ON
	bit7	SW103-8	—	SW103-8	0: ON

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Address	bit	Description	Signal	Connector	Remarks
P019	bit0	SW104 input		PSW-104	0: ON
	bit1	SW106 input		PSW-106	0: ON
	bit2	SW105 input		PSW-105	0: ON
	bit3	Punch hole number set		SW107-1	1: 2 holes, 0: 3 holes
	bit4	For adjustment 0		SW107-2	0: ON
	bit5	For adjustment 1		SW107-3	0: ON
	bit6	For adjustment 2		SW107-4	0: ON
	bit7	For adjustment 3		SW107-5	0: ON
P020	bit0	Segment a		LED101	1: ON
	bit1	Segment b		LED101	1: ON
	bit2	Segment c		LED101	1: ON
	bit3	Segment d		LED101	1: ON
	bit4	Segment e		LED101	1: ON
	bit5	Segment f		LED101	1: ON
	bit6	Segment g		LED101	1: ON
	bit7	Segment dot		LED101	1: ON
P021	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P022	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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Address	bit	Description	Signal	Connector	Remarks
P023	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P024	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P025	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P026	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P027	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P028	bit0	Tray B upper position sensor (PI20) detection	STTRYUPPO	J110-B4	1: blocked
	bit1	Tray B lower position sensor (PI21) detection	STTRLWPPO	J110-B3	1: blocked
	bit2	Stapler shift home position detection (PI17)	STPLHP	J112-8	1: HP
	bit3	Stapling home position detection (PI19)	STPDRHP	J111-11	1: HP
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P029	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P030	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P031	bit0	Not used			
	bit1	Not used			
	bit2	Tray B lock detection (PI23)	STTRYDL	J110-B10	
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P032	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P033	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			
P034	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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I/O>SORTER

Address	bit	Description	Signal	Connector	Remarks
P035	bit0	Not used			
	bit1	Not used			
	bit2	Not used			
	bit3	Not used			
	bit4	Not used			
	bit5	Not used			
	bit6	Not used			
	bit7	Not used			

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D. ADJUST Adjustment Mode

Figure 13-D801 shows the screen under COPIER>AJDUST and its Level 3 items.

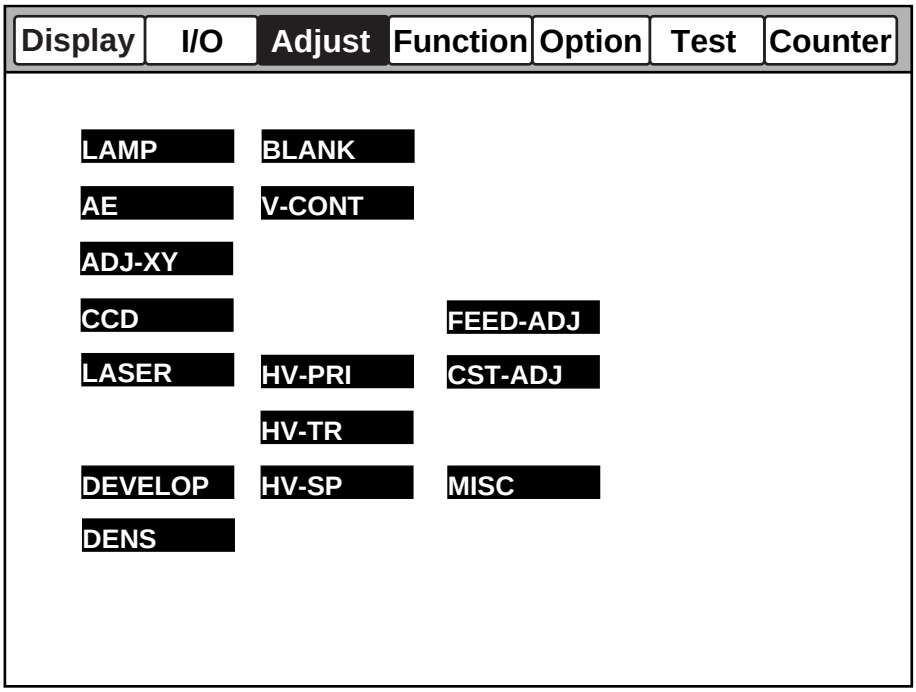


Figure 13-D801 Level 2 Items under COPIER>ADJUST

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Items under COPIER>ADJUST

Level 1	Level 2	Level 3	Range	Description
ADJUST	LAMP	L-DATA	0 to 255	Use it to adjust the scanning lamp intensity data.
	AE	AE-TBL	1 to 9	Use it to adjust the text density for AE mode with priority on speed.
	ADJ-XY	ADJ-X	0 to 2970	Use it to adjust the image leading edge position.
		ADJ-Y	360 to 1360	Use it to adjust the CCD image read start position (main scanning direction).
		ADJ-S	0 to 4	Use it to adjust the scanner home position.
	CCD	GAIN-E	80 to 160	Use it to adjust the CCD even-number photocell gain.
		GAIN-O	80 to 160	Use it to adjust the CCD odd-number photocell gain.
		OFST-E	1 to 254	Use it to adjust the CCD even-number photocell offset.
		OFST-O	1 to 254	Use it to adjust the CCD odd-number photocell offset.
		SH-TRGT	1 to 511	Use it to set the white level target value for shading correction.
	LASER	PVE-OFST	-300 to 300	Use it to adjust the offset from the center of the laser.
		LA-DELAY	450 to 550	Use it to enter the laser delay value for the laser unit.
		LA-PWR-A	48 to 432	Use it to set the laser A power adjustment value.
		LA-PWR-B	48 to 432	Use it to set the laser B power adjustment value.
		IP-DELAY	5 to 25	Use it to set the laser delay value for the IP PCB.
	DEVELOP	DE-DC	0 to 500	Use it to set the developing DC output adjustment value for image exposure.
		DE-NO-DC	0 to 500	Use it to set the developing DC output adjustment value for image exposure.
		DE-OFST	-50 to 50	Use it to adjust the offset for the image bias DC component.
	DENS	DENS-ADJ	1 to 9	Use it to adjust copy density.
	BLANK	BLANK-T	0 to 2362	Use it to set the leading edge non-image width.
		BLANK-B	0 to 2362	Use it to set the trailing edge non-image width.
	V-CONT	EPTOTOFST	0 to 255	Use it to set the potential sensor offset.
		VL-OFST	-5 to 5	Use it to set the light area potential target value offset.
		VD-OFST	-5 to 5	Use it to set the dark area potential target value offset.
	HV-PRI	GRID	400 to 900	Use it to set the primary charging assembly grid bias output adjustment value.
	HV-TR	TR-N1	-650 to -150	Use it to set the transfer charging output adjustment value (1st side).
		TR-N2	-650 to -150	Use it to set the transfer charging output adjustment value (2nd side).
		PRE-TR	0 to 300	Use it to set the output adjustment value for the pre-transfer charging assembly.
	HV-SP	SP-N1	0 to 500	Use it to set the separation charging output adjustment value (1st side).
		SP-N2	0 to 500	Use it to set the separation charging output adjustment value (2nd side).

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Items under COPIER>ADJUST

Level 1	Level 2	Level 3	Range	Description
ADJUST	FEED-ADJ	REGIST	-50 to 50	Use it to adjust the activation timing for the registration clutch.
		ADJ-REFE	-101 to 100	Use it to adjust the re-pickup horizontal registration.
	CST-ADJ	C3-STMTR		Use it to adjust the paper width sensor for the cassette 3 (STMTR).
		C3-A4R		Use it to adjust the paper width sensor for the cassette 3 (A4R).
		C4-STMTR		Use it to adjust the paper width sensor for the cassette 4 (STMTR).
		C4-A4R		Use it to adjust the paper width sensor for the cassette 4 (A4R).
		MF-A4R		Use it to adjust the paper width sensor for the manual feed cassette (A4R).
		MF-A6R		Use it to adjust the paper width sensor for the manual feed tray (A6R).
		MF-A4		Use it to adjust the paper width sensor for the manual feed tray (A4).
		C3-LVOL		Use it to set the stacking limit for the cassette 3 (50 sheets).
		C3-HVOL		Use it to set the stacking limit for the cassette 3 (275 sheets).
		C4-LVOL		Use it to se the stacking limit for the cassette 4 (50 sheets).
		C4-HVOL		Use it to set the stacking limit for the cassette 4 (275 sheets).

Items under FEEDER>ADJUST

Level 1	Level 3	Range	Description
ADJUST	DOCST	-50 to 50	Use it to adjust the original stop position.
	DOCST-M	-50 to 50	Use it to adjust the original stop position (for manual feed).
	LA-SPEED	-54 to 54	Use it to adjust the original feeding speed for stream reading mode.
	STRD-S	-25 to 25	Use it to adjust the original stop position for stream reading mode (for small-size).
	STRD-L	-25 to 25	Use it to adjust the original stop position for stream reading mode (for large-size).
	RVM-SPD	-30 to 30	Use it to adjust the reversal motor speed.

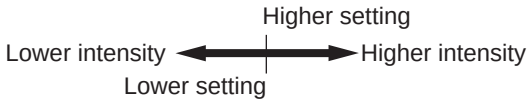
Items under SORTER>ADJUST

Level 1	Level 3	Range	Description
ADJUST	PNCH-HLE		Use it to adjust the offset of punch holes.

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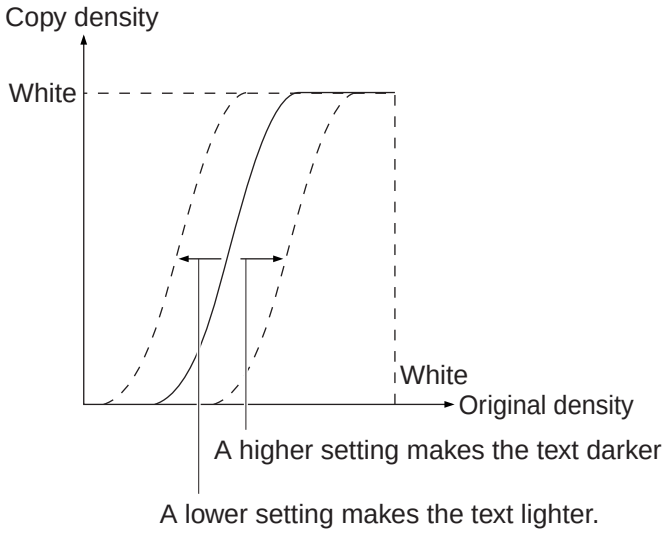
<LAMP> COPIER>ADJUST

Adjusting the Activation Voltage of the Scanning Lamp

Level 3	Description	Remarks
L-DATA	Entering Scanning Lamp Intensity Data • If faulty images are generated after execution of COPIER>FUNCTION>CCD>CCD-ADJ, enter the value recorded on the service label. • This will determine FL-PWM. 	Range : 0 to 255

<AE>

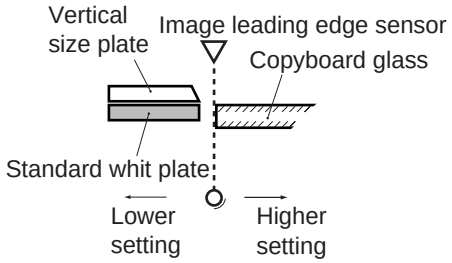
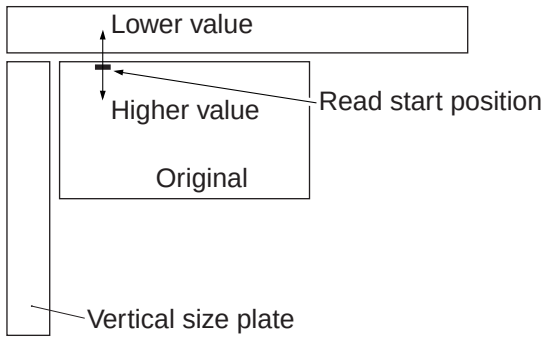
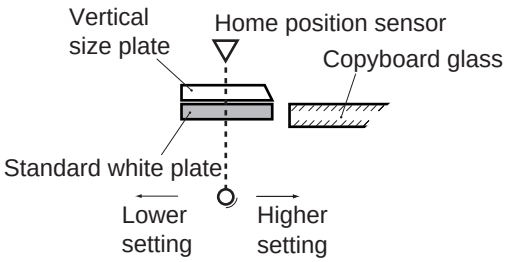
AE Adjustment

Level 3	Description	Remarks
AE-TBL	Adjusting Text Density for Real-Time AE Mode • Enter a value to adjust the density correction curve for real-time AE mode (10 settings). 	Range : 0 to 9 (default at 3)

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<ADJ-XY>
Adjusting the Image Read Start Position

COPIER>ADJUST

Level 3	Description	Remarks
ADJ-X	Adjusting the Scanner Image Leading Position • Enter a value to adjust the image leading edge position. 	Range : 0 to 2970 ('12' causes a shift of 1 mm) • Be sure to execute this mode before adjusting the margin. • Do not create a margin using this mode.
ADJ-Y	Adjusting the CCD Read Start Position • Enter a value to adjust the read start position. 	Range : 360 to 1360 (each '12' causes a shift of 1 mm)
ADJ-S	Adjusting the Scanner Home Position • Enter a value to adjust the home position (standard white plate read position). 	Range : 0 to 4 • If dirt exists on the standard white plate, use this mode to avoid reading the area.

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<CCD>
Adjusting CCD/Shading-Related items

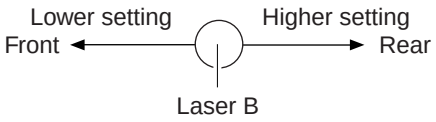
COPIER>ADJUST

Level 3	Description	Remarks
GAIN-E	Use it to enter a gain adjustment value for the CCD output for even-number pixels.	Execute COPIER>FUNCTION>CCD>CCD-ADJ; then, if a faulty image is generated, enter the value recorded on the service label.
GAIN-O	Use it to enter a gain adjustment value for the CCD output for odd-number pixels.	
OFST-E	Use it to enter an offset adjustment value for the CCD output for even-number pixels.	
OFST-O	Use it to enter an offset adjustment value for the CCD output for odd-number pixels.	
SH-TRGT	Use it to enter a white level target value for shading correction.	

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<LASER>
Adjusting the Laser Output

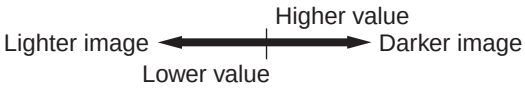
COPIER>ADJUST

Level 3	Description	Remarks
PVE-OFST	Use it to adjust the position of laser exposure.  	Range : -300 to 300 • If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the label on the PCB. • Note that laser A shifts in sync with laser B.
IP-DELAY	Use it to enter a delay value for the image processor PCB.	If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the PCB.
LA-PWR-A	Use it to enter a laser power adjustment value for laser A.	If you have replaced the laser unit or initialized the RAM on the IP PCB, enter the value recorded on the label attached to the laser unit.
LA-PWR-B	Use it to enter a laser power adjustment value for laser B.	
LA-DELAY	Use it to enter a delay value for the laser unit.	If you have replaced the laser unit or initialized the RAM on the IP PCB, enter the value recorded on the label attached to the laser unit.

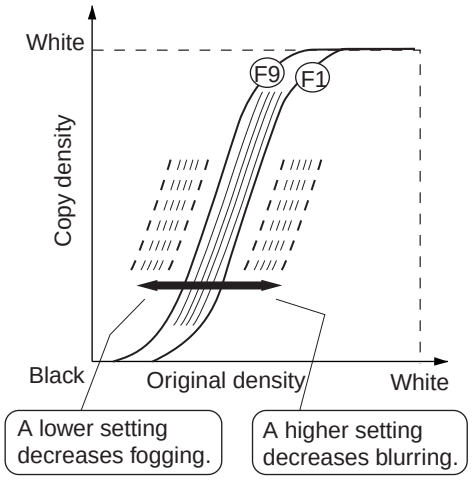
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<DEVELOP>
Adjusting the Developing Bias Output

COPIER>ADJUST

Level 3	Description	Remarks
DE-DC	Use it to enter a DC bias output value for the image area.	Range: 0 to 500 • If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.
DE-NO-DC	Use it to enter a developing bias output value for sheet-to-sheet distance.	
DE-OFST	Use it to adjust the offset value of the developing DC bias. 	Range : -50 to 50 • If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.

<DENS>
Fine-Adjusting Copy Density Auto Correction

Level 3	Description	Remarks
DENS-ADJ	Correcting Copy Density • Use it to correct the f-value table if the copy image is foggy or the high-density area is blurred. 	Range : 0 to 9 (default at 3)

<BLANK>
Adjusting the Non-Image Width

COPIER>ADJUST

Level 3	Description	Remarks
BLANK-T	Use it to enter a non-image width adjustment value for the image leading edge.	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.
BLANK-B	Use it to enter a non-image width adjustment value for the image trailing edge.	

<V-CONT>
Adjusting the Potential Control System

Level 3	Description	Remarks
EPOTOFST	Use it to enter an offset value for the potential sensor.	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.
VL-OFST	Use it to enter an offset value for the VL target potential.	
VD-OFST	Use it to enter an offset value for the VD target potential.	

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<HV-PRI>
Adjusting the Output of the Primary Charging Assembly

COPIER>ADJUST

Level 3	Description	Remarks
GRID	Use it to enter an output adjustment value for the grid bias.	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.

<HV-TR>
Adjusting the Output of the Transfer Charging Assembly/Pre-Transfer Charging Assembly

Level 3	Description	Remarks
TR-N1	Use it to enter an output adjustment value for the transfer charging current (for plain paper; single-sheet or 1st side of double-sided sheet).	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.
TR-N2	Use it to enter an output adjustment value for the transfer charging current (for plain paper; 2nd side of double-sided sheet).	
PRE-TR	Use it to enter an output adjustment value for the pre-transfer charging current.	

<HV-SP>
Adjusting the Output of the Separation Charging Assembly

Level 3	Description	Remarks
SP-N1	Use it to enter an output adjustment value for separation charging current (for plain paper; single-sided sheet or 1st side of double-sided sheet).	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value on the service label.
SP-N2	Use it to enter an output value for the separation charging current (for plain paper; 2nd side of double-sided sheet).	

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<FEED-ADJ>
Adjusting the Feeding System

COPIER>ADJUST

Level 3	Description	Remarks
REGIST	Adjusting the Activation Timing for the Registration Clutch • A higher setting delays the timing, decreasing the leading edge margin.	Range : -50 to 5 (each '23' causes a shift of 1 mm)
ADJ-REFE	Adjusting the Horizontal Registration for Re-Pickup • If the image is displaced to the rear, enter a lower setting. • If the image is displaced to the front, enter a higher setting.	Range : -101 to 100 (each '23' causes a shift of 1 mm)

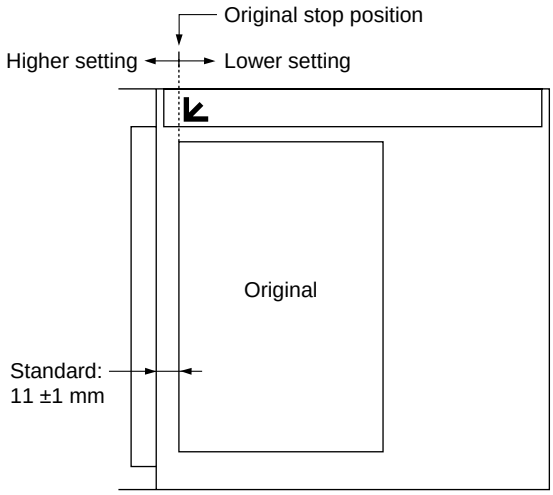
<CST-ADJ>
Adjusting the Cassette/Manual Feed Tray-Related Items

Level 3	Description	Remarks
C3-STMTR	Use it to enter a paper width basic value for the cassette 3 (STMTR).	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label. • Be sure to execute FUNCTION>CST if you have replaced the paper width sensor.
C3-A4R	Use it to enter a paper width basic value for the cassette 3 (A4R).	
C4-STMTR	Use it to enter a paper width basic value for the cassette 4 (STMTR).	
C4-A4R	Use it to enter a paper width basic value for the cassette 4 (A4R).	
MF-A4R	Use it to enter a paper width basic value for the manual feed tray (A4R).	
MF-A6R	Use it to enter a paper width basic value for the manual feed tray (A6R).	
MF-A4	Use it to enter a paper width basic value for the manual feed tray (A4).	
C3-LVOL	Use it to set the stacking limit for the cassette 3 (50 sheets).	• If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.
C3-HVOL	Use it to set the stacking limit for the cassette 3 (250 sheets).	
C4-LVOL	Use it to set the stacking limit for the cassette 4 (50 sheets).	
C4-HVOL	Use it to set the stacking limit for the cassette 4 (250 sheets).	

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<FEEDER>

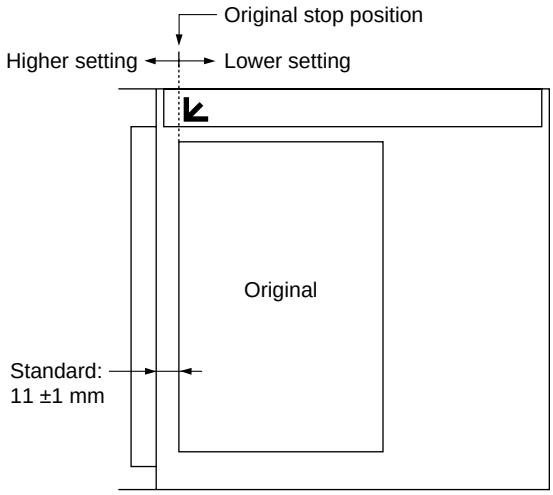
FEEDER>ADJUST

Level 3	Description	Remarks
DOCST	Adjusting the Original Stop Position for Pickup from the Feeder (original tray pickup) Operation 1) Select DOCST. 2) Place paper on the tray (A3/11"x17"). 3) Enter a setting using the keypad.  4) Press the OK key. • The paper on the original tray will be picked up and stopped on the copyboard glass. 5) Open the feeder slowly, and check the position of the paper. 6) Close the feeder slowly without removing the paper. 7) Press the OK key. • The paper on the copyboard glass will be delivered to the original tray. 8) If the stop position is not as indicated, go back to step 3), and make adjustments once again.	Range : -50 to 50 (Each '1' causes a shift of 0.5 mm) • The data is retained by the ADF controller PCB on the feeder side.

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<FEEDER>

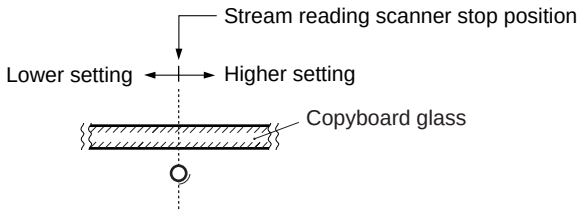
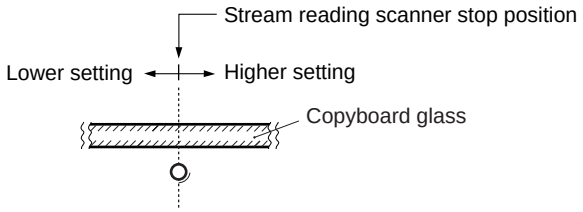
FEEDER>ADJUST

Level 3	Description	Remarks
DOCST-M	Adjusting the Original Stop Position for Pickup for the Feeder (manual tray pickup) Operation 1) Select DOCST-M. 2) Place paper on the manual feed tray (A3/11"×17"). 3) Enter a setting using the keypad.  4) Press the OK key. • The paper on the manual feed tray will be picked up and stopped on the copyboard glass. 5) Open the feeder slowly, and check the position of the paper. 6) Close the feeder slowly without removing the paper. 7) Press the OK key. • The paper on the copyboard board glass will be delivered to the manual feed tray. 8) If the stop position is not as indicated, go back to step 3), and make adjustments once gain.	Range : -50 to 50 (Each '1' causes a shift of 0.5 mm) • The data is retained by the ADF controller PCB on the feeder side.

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<FEEDER-Related Items>

FEEDER>ADJUST

Level 3	Description	Remarks
LA-SPEED	Adjusting the Original Feeding Speed for Stream Reading Mode	Range : -54 to 54 (a higher setting will increase the speed) • The data is retained by the controller PBC of the ADF on the feeder side.
STRD-S	Adjusting the Scanner Stop Position for Stream Reading Mode (small-size)  	Range : -25 to 25 (each '1' causes a shift of 0.1 mm) • The data is retained by the IP PCB on the copier. • If you have replaced the IP PCB or initialized the RAM on the IP PCB, enter the value recorded on the service label.
STRD-L	Adjusting the Scanner Stop Position for Stream Reading (large-size)  	
RVM-SPD	Adjusting the speed of Reversal Motor • For details, see the Feeder Service Manual.	Range : -30 to 30 (each '1' increases the speed by 0.1%) • The data is retained by the controller PBC of the ADF on the feeder side.

<SORTER-Related Items>

Level 3	Description	Remarks
PNCH-HLE	Adjusting the offset for Punch Hole Position (feeding direction) • For details, see the Finisher Service Manual.	Range : 6 to 24mm (12mm at default) • The data is retained by the finisher controller PCB on the finisher side.

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E. FUNCTION Operation/Inspection Mode

Figure 13-E801 shows the screen under COPIER>FUNCTION and its items.

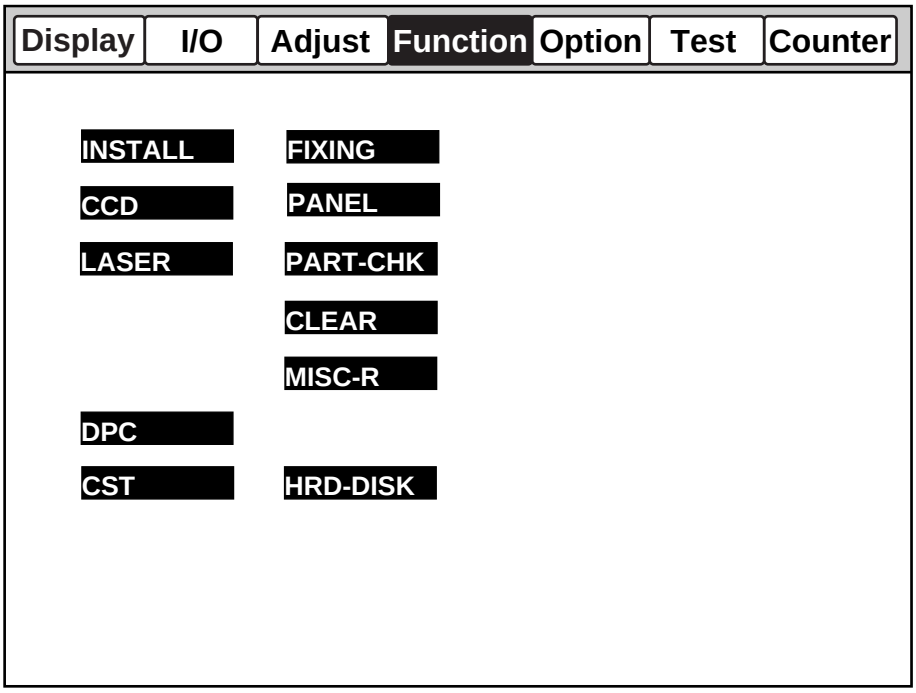


Figure 13-E801 Items under COPIER>FUNCTION

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Items under COPIER>FUNCTION

Level 1	Level 2	Level 3	Description
FUNCTION	INSTALL	TONER-S	Use it to supply or stir toner.
	CCD	CCD-ADJ	Use it to execute auto adjustment of shading.
	LASER	POWER-A	Use it to turn on laser A.
		POWER-B	Use it to turn on laser B.
	DPC	OFST	Use it to adjust the offset for the potential sensor.
	CST	C3STMTR	Use it to execute auto registration of a paper width basic value for the cassette 3 (STMTR).
		C3-A4R	Use it to execute auto registration of a paper width basic value for the cassette 3 (A4R).
		C4-STMTR	Use it to execute auto registration of a paper width basic value for the cassette 4 (STMTR).
		C4-A4R	Use it to execute auto registration of a paper width basic value for the cassette 4 (A4R).
		MF-A4R	Use it to execute auto registration of a paper width basic value for the manual feed tray (A4R).
		MF-A6R	Use it to execute auto registration of a paper width basic value for the manual feed tray (A6R).
		MF-A4	Use it to execute auto registration of a paper width basic value for the manual feed tray (A4).
	FIXING	NIP-CHK	Use it to generate a nip width check image output for the fixing roller.
	PANEL	LCD-CHK	Use it to check missing dots on the touch panel.
		LED-CHK	Use it to check the activation of the LEDs on the control panel.
		LED-OFF	Use it to check the de-activation of the LEDs on the control panel.
		KEY-CHK	Use it to check the inputs of the keys on the control panel.
		TOUCHCHK	Use it to adjust the coordinates for the touch panel.
	PART-CHK	CL	Use it to select a clutch that turns on at CL-ON.
		CL-ON	Use it to check the operation of a clutch.
		MTR	Use it to check the operation of a motor.
		MTR-ON	Use it to check the operation of a motor.
		SL	Use it to select a solenoid that turns on at SL-ON.
		SL-ON	Use it to check the operation of a solenoid.
	CLEAR	ERR	Use it to clear error codes.
		IP	Use it to initialize the RAM on the image processor PCB.
		JAM-HIST	Use it to clear the jam history.
		ERR-HIST	Use it to initialize the error code history.
		MF-CON	Use it to initialize the RAM on the MFC PCB.
	MISC-R	SCANLAMP	Use it to check the activation of the scanning lamp.
		PRE-EXP	Use it to check the activation of the pre-exposure LEDs.
	HRD-DISK	SCANDISK	Use it to scan the hard disk.
		FORMAT	Use it to format the hard disk.

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The state of the machine is indicated in the upper right corner of the screen. Pay attention to the indications while executing service mode; they include the following:

READY: The machine is ready for servicing/copying operation.

SERVICE: The machine is performing servicing operations. (This indication is used while in inspection/operation mode of service mode.)

Items under FEEDER>FUNCTION

Level 1	Level 3	Description
FUNCTION	SENS-INT	Use it to adjust the sensitivity of each sensor of the feeder.
	BLT-CLN	Use it to clean the separation belt of the feeder.
	REG-CLN	Use it to clean the registration roller of the feeder.

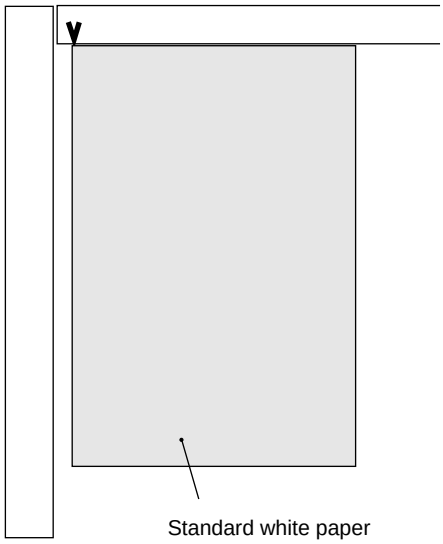
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<INSTALL>
Operations for Installation

COPIER>FUNCTION

Level 3	Description	Remarks
TONER-S	Supplying Toner from the Toner Cartridge to the Hopper/Developing Assembly and Stirring the Toner Inside the Developing Assembly Operation Select TONER-S to highlight, and press the OK key. (The operation ends in about 10 min.) **Caution:** 1. Before pressing the OK key, check to be sure that the developing assembly is fitted securely. 2. Do not turn off the power while the machine is in operation.	• A count-down number is indicated to the right of TONER-S during operation. • No key except the Stop key is enabled during operation.

<CCD>
Executing Auto Adjustment for CCD/Shading-Related Items

Level 3	Description	Remarks
CCD-ADJ	Executing Auto Adjustment for Shading Operation 1) Place standard white paper* (10 sheets or more) on the copyboard glass.  2) Select CCD-ADJ to highlight, and press the Ok key. 3) See that the machine has entered auto adjustment mode. (The adjustment ends in about 1 min.) 4) Record all items under COPIER>ADJUST>CCD and the data under COPIER>ADJUST>LAMP>L-DATA on the service label when they have been updated. * Whitest of all papar used by the user (except paper for a color copier).	If you have replaced the CCD unit, scanning lamp, image processor PCB, or standard white plate, execute this mode.

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<LASER>
Laser-Related Operations

COPIER>FUNCTION

Level 3	Description	Remarks
POWER-A POWER-B	Turning On the Laser Operation 1) Select POWER-A or POWER-B to highlight, and press the OK key. 2) See that the selected laser turns on and SERVICE is indicated in the upper right of the screen. 3) See that the laser turns off automatically in about 30 sec. To turn off the laser before that, press the Stop key.	

<DPC>
Executing Automatic Adjustment of Photosensitive Drum Potential-Related Items

Level 3	Description	Remarks
OFST	Adjusting the Potential Sensor Offset Operation 1) Select OFST to highlight, and press the OK key.	• This item is one of series of procedures executed after replacing the potential sensor. Do not use it on its own. For details, See II.C. "Image Formation."

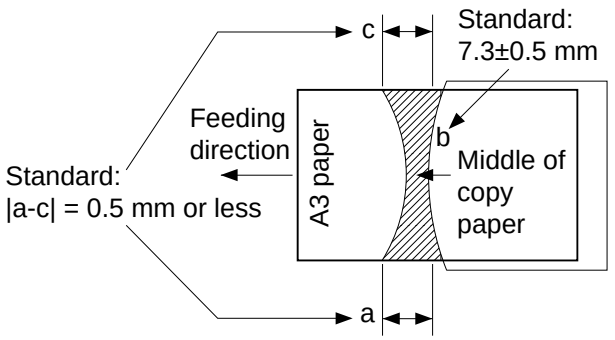
<CST>
Storing the Cassette/Manual Feed Tray Paper Width

Level 3	Description	Remarks
C3-STMTR C3-A4R C4-STMTR C4-A4R	Registering the Paper Width Basic Value for the Cassette 3/4 Operation 1) Set paper of the STMTR size in the cassette, and adjust the side guide plate to its width. 2) Select C3-STMTR (C4-STMTR) to highlight, and press the OK key. • The new setting will be stored under C3-STMTR (C4-STMTR). 3) Repeat steps 1) and 2) for A4R size.	STMTR width : 139.5 mm A4R width : 210 mm • For fine-adjustment, use the following: ADJUST >CST-ADJ>C3-STM-TR (C4-STMTR), C3-A4R (C4-A4R).
MF-A4R MF-A6R MF-A4	Registering the Paper Width Basic Value for the Manual Feed Tray Operation 1) Place A4R paper on the manual feed tray, and adjust the side guide to its width. 2) Select MF-A4R to highlight, and press the OK key. The new setting will be stored under MF-A4R. 3) Repeat steps 1) and 2) for A6R and A4 sizes.	A4R width:210 mm A6R width:105 mm A4 width: 297 mm • For fine-adjustment, use the following: ADJUST>CST-ADJ>MF-A4R, MF-A6R, MF-A4.

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<FIXING>
Executing Auto Adjustment for Fixing Assembly-Related Items

COPIER>FUNCTION

Level 3	Description	Remarks
NIP-CHK	Generating a Fixing Nip Width Measurement Print Operation 1) Make about 20 copies of the Test Sheet in A4. 2) Set A3 paper on the manual feed tray. 3) Select NPP-CHK to highlight, and press the OK key. • The paper will be picked up and stopped between the fixing rollers; then, it will be discharged in about 20 sec. 4) Measure the width as indicated.  **Caution:** a and c are points 10 mm from both ends of paper.	

<PANEL>
Activating the LEDs on the Control Panel

COPIER>FUNCTION

Level 3	Description	Remarks
LCD-CHK	Checking the Touch Panel for Missing Dots Operation 1) Select the item to highlight, and press the OK key. • The entire face of the touch panel will turn on white and then blue repeatedly. 2) Press the Stop key to end the operation.	
LED-CHK	Checking LEDs on the Control Panel Operation 1) Select item to highlight, and press the OK key. • The LEDs will turn on in sequence. To stop, select LED-OFF.	
LED-OFF	Ending a Check on the LEDs of the Control Panel Operation 1) Select the item to highlight, ending the operation.	
KEY-CHK	Checking the Key Inputs Operation 1) Select the item to highlight. 2) Press any key to check. If normal, the corresponding characters will be indicated on the touch panel. 3) Select KEY-CHK to end the operation.	See Table 13-E801.
TOUCHKEY	Adjusting the Coordinates for the Touch Panel Operation 1) Select the item to highlight, and press the OK key. 2) Press "+" indicated on the touch panel in sequence (9 points). 3) When the adjustment is over, select TOUCHKEY to end the operation.	• The point of a press on the touch panel and the coordinates of the LCD are matched. • Execute this mode if you have replaced the LCD assembly.

	Screen indication
Copy A	COPY A
Copy B	COPY B
Mail Box	PB
Extension	OTHER
0 ~ 9	0 ~ 9

	Screen display
ID	ID
C	CLEAR
//	RESET
?	?
*	M

	Screen display
	INTERRUPT
	STOP
	START
	STAND BY

Table 13-E801 KEY-CHK Screen

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<PART-CHK>
Checking the Operation of Loads

COPIER>FUNCTION

Level 3	Description	Remarks
CL	Selecting the Clutch to Check Operation 1) Select CL. 2) Using the keypad, enter the code of the clutch. (See the code table that follows.) 3) Press the OK key.	
CL-ON	Checking the Operation of the Clutch. Operation 1) Select CL-ON, and press the OK key.	ON → 10 sec OFF → ON → 10 sec OFF → ON → OFF
MTR	Selecting the Motor to Check Operation 1) Select MTR. 2) Using the keypad, enter the code of the motor to check. (See the code table that follows.) 3) Press the OK key.	
MTR-ON	Checking the Motor Operation 1) Select MTR-ON, and press the OK key.	10 sec ON → OFF
SL	Selecting the Solenoid to Check Operation 1) Select SL. 2) Using the keypad, enter the code of the solenoid. (See the code table that follows.) 3) Press the OK key.	
SL-ON	Checking the Solenoid Operation 1) Select SL-ON, and press the OK key.	ON → 10 sec OFF → ON → 10 sec OFF → ON →OFF

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Code	
1	Manual tray pickup clutch (CL7)
2	Cassette 3 pickup clutch (CL12)
3	Vertical path 3 roller drive clutch (CL13)
4	Cassette 4 pickup clutch (CL14)
5	Vertical path 4 roll drive clutch (CL15)
6	Front deck (right) pickup clutch (CL10)
7	Vertical path 1 roller drive clutch (CL8)
8	Front deck (left) pickup clutch (CL11)
9	Vertical path 2 roller drive clutch (CL9)
10	Pre-registration roller drive clutch (CL5)
11	Lower feeding middle roller drive clutch (CL16)
12	Lower feeding right roller drive clutch (CL17)
13	Front deck (left) feeding clutch (CL19)
14	Delivery speed switching clutch (CL21)
15	Registration roller brake drive clutch (CL3)
16	Manual feed tray feeding clutch (CL18)
17	Hopper drive clutch (CL1)
18	Developing cylinder drive clutch (CL4)
19	Registration roller drive clutch (CL2)
20	Side paper deck feeding clutch (CL101)
21	Side paper deck pickup clutch (CL102)

Code	
1	Drum motor (M0)
2	Main motor (M1)
3	Pickup motor (M2)
4	Fixing motor (M3)
5	Laser scanner motor (M4)
6	Cartridge motor (M6)
7	Hopper motor (M18)
8	Horizontal registration motor (M15)
9	Duplexing reversal motor (M11)
10	Duplexing feeding motor (M12)
11	Side paper deck main motor (M101)

Code	
1	Front deck (right) pickup solenoid (SL7)
2	Front deck (left) pickup solenoid (SL8)
3	Cassette 3 pickup solenoid (SL9)
4	Cassette 4 pickup solenoid (SL10)
5	Manual feed tray pickup clutch solenoid (SL6; push)
6	Manual feed tray pickup clutch solenoid (SL6; pull)
7	Delivery flapper drive solenoid (SL3)
8	Reversing flapper drive solenoid (SL11)
9	Fixing inlet guide drive solenoid (SL1; push)
10	Fixing inlet guide drive solenoid (SL1; pull)
11	Fixing cleaning belt drive solenoid (SL2)
12	Fixing feeding unit locking solenoid (SL4; push)
13	Fixing feeding unit locking solenoid (SL4; pull)

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<CLEAR>
Clearing RAM/Error Code Histories

COPIER>FUNCTION

Level 3	Description	Remarks
ERR	Clearing Error Codes Operation 1) Select the item to highlight, and press the OK key. 2) Turn off and then on the main power.	• The code is cleared only when the main power switch is turned off and then on. Be sure to turn it off and then on.
IP	Initializing the RAM on the Image Processor Operation 1) Select the item to highlight, and press the OK key. 2) Turn off and then on the main power.	• The RAM is initialized only when the main power switch is turned off and then on. Be sure to turn it off and then on.
JAM-HIST	Clearing the Jam History Operation 1) Select the item to highlight, and press the OK key. 2) Turn off and then on the main power.	• The history is cleared only when the main power switch is turned off and then on. Be sure to turn it off and then on.
ERR-HIST	Clearing the Error Code History Operation 1) Select the item to highlight, and press the OK key. 2) Turn off and then on the main power.	• The history is cleared only when the main power switch is turned off and then on. Be sure to turn it off and then on.
MF-CON	Initializing the RAM on the MFC PCB Operation 1) Select the item to highlight, and press the OK key. 2) Turn off and then on the main power.	• The RAM is initialized only when the main power switch is turned off and then on. Be sure to turn it off and then on.

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<MISC-R>
Checking the Scanning System

COPIER>FUNCTION

Level 3	Description	Remarks
SCANLAMP	Checking the Activation of the Scanning Lamp Operation 1) Select the item to highlight, and press the OK key. • The scanning lamp will turn on for about 3 sec and then will turn off.	
PRE-EXP	Checking the Activation of the Pre-exposure Lamp Operation 1) Select the item to highlight, and press the OK key. • The scanning lamp will turn on for about 3 sec and then will turn off.	

<HRD-DISK>
Checking the Operation of the Hard Disk

Level 3	Description	Remarks
SCANDISK	Detecting an Error on/Initializing the Hard Disk • The operation starts, and the count is made starting at 0%; the operation ends at 100% (in about 25 min).	• Execute this mode if the hard disk has some kind of problem.
FORMAT	Initializing the Hard Disk (ends in about 1 sec).	• Execute this mode for a normal hard disk. • Execute this mode at time of shipment from the factory or after replacing the hard disk.

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<FEEDER-Related Items>

FEEDER>FUNCTION

Level 3	Description	Remarks
SENS-INT	Adjusting the Sensitivity of Sensors of the Feeder • For details, see the Feeder Service Manual (B. "Making Adjustment after Replacing the Major Parts"). • The operation is identical to when the push switch (SW2) is turned on.	
BLT-CLN	Cleaning the Feeder Separation Belt (See chapter 5 E. "Cleaning.") • For Details, see the Feeder Service Manual. • The operation is identical to when the push switch (SW2) is turned on.	
REG-CLN	Cleaning the Feeder Registration Roller (See E. "Cleaning.") • For details, see the feeder Service Manual. • The operation is identical to when the push switch (SW2) is turned on.	

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F. OPTION Settings Mode

Figure 13-F801 shows the screen under COPIER>OPTION and its items.

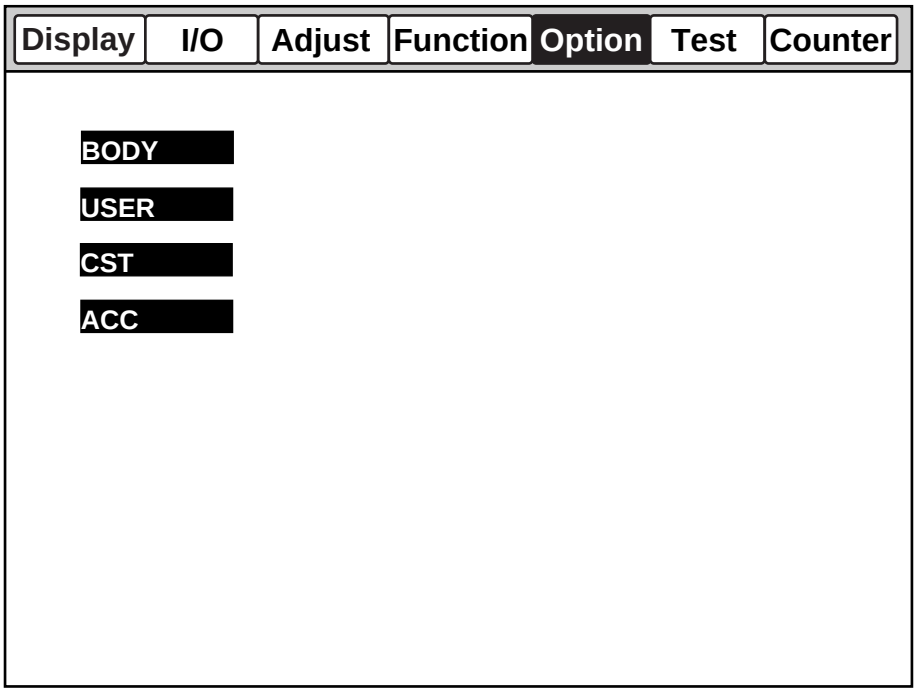


Figure 13-F801 Screen under Items COPIER>OPTION

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Items under COPIER>OPTION

Level 1	Level 2	Level 3	Description
OPTION	BODY	PO-CONT	Use it to turn on/off potential control.
		MODEL-SZ	Use it to select the site (country) of installation.
		TRNSG-SW	Use it to select transfer guide bias control mode.
		FIX-TMP	Use it to select operation temperature for thick paper copy down sequence.
		CPMKP-SW	Use it to turn on/off thick paper copy down sequence.
		IDL-MODE	Use it to select developing assembly idle rotation mode.
		FUZZY	Use it to turn on/off fuzzy control.
		SCANSLCT	Use it to turn on/off original size detection by the ADF.
		OHP-TEMP	Use it to select fixing roller control temperature for copying on transparencies.
		PM-RD-MD	Use it to turn on/off potential control for transparencies.
		OHP-CNT	Use it to turn on/off potential control for transparency mode.
		CNT-W/HM	Use it to select potential control for high humidity environment mode.
		PR-SEL	Use it to select uneven potential reduction mode.
		CNT-W/PR	Use it to turn on/off density variation mode for printing operation.
		FIX-TMP1	Use it to select operating temperature for down sequence.
		TRSW-P-B	Use it to turn on/off transfer current output correction control along edges of paper.
		SP-MODE	Use it to turn on/off separation current output correction.
		FTMP-DWN	Use it to select stacking enhancement mode.
		DRUM-CLN	Use it to select drum cleaning enhancement mode.
		F-GD-CNT	Use it to select fixing inlet guide color mode.
		DRM-IDL	Use it to select drum idle rotation mode.
	USER	COPY-LIM	Use it to change the upper copy limit.
		SLEEP	Use it to turn on/off the sleep function.
		WEB-DISP	Use it to turn on/off the fixing cleaning belt level warning indication.
		SIZE-DET	Use it to turn on/off the original size detection function.
		DATE-DSP	Use it to switch data/time notation.
		MB-CCV	Use it to restrict users of the mail box by control cards.
		PM-DENS	Use it to turn off/on density variation mode for during printing (scanner input).
		PR-D-SEL	Use it to set density for printing (PDL input).
	CST	U1-NAME	Use it to turn on/off paper notation in terms of paper size group U1
		U2-NAME	Use it to turn on/off paper notation in terms of paper size group U2
		U3-NAME	Use it to turn on/off paper notation in terms of paper size group U3
		U4-NAME	Use it to turn on/off paper notation in terms of paper size group U4
		CST-U1	Use it to select paper notation for paper size group U1.
		CST-U2	Use it to select paper notation for paper size group U2.
		CST-U3	Use it to select paper notation for paper size group U3.
		CST-U4	Use it to select paper notation for paper size group U4.
		P-SZ-C1	Use it to select a paper size for the front deck (right).
		P-SZ-C2	Use it to select a paper size for the for deck (left).
		C1-DWSW	Use it to turn on/off the thick paper control sequence for the front deck (right).
		C2-DWSW	Use it to turn on/off the thick paper control sequence for the front deck (left).
		DK-DWSW	Use it to turn on/off the thick paper control sequence for the option deck.
		C3-DWSW	Use it to turn on/off the thick paper control sequence for the cassette 3.
		C4-DWSW	Use it to turn on/off the thick paper control sequence for the cassette 4.
	ACC	DK-P	Use it to select the paper size for the side paper deck.
		COIN	Use it to turn on/off the coin vender notation.

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Items under FEEDER>OPTION

Level 1	Level 3	Description
OPTION	DOC-F-SW	Use it to turn on/off stream reading mode
	SIZE-SW	

Items under SORTER>OPTOIN

Level 1	Level 3	Description
OPTION	BLNK-SW	Use it to set a margin for the saddle stitcher.

Items under BOARD>OPTION

Level 1	Level 3	Description
OPTION	LIPS-HL	Use it to select menu display mode for the LIPS board.

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<BODY>
Selecting Copier-Related Machine Settings

COPIER>OPTION

Level 3	Description	Remarks
PO-CNT	Use it to turn on/off potential control.	0: off 1: on (default)
MODEL-SZ	Use it to select the site (country) of installation for the feeder. • This changes the way the default ratios are displayed and how the feeder identifies the size of originals.	0: AB (6R5E) 1: Inch (5R4E) 2: A (3R3E) 3: AB/Inch (6R5E)
TRNSG-SW	Use it to select transfer guide bias control mode. • If transfer faults occur in images, increase the settings.	0: for extremely high humidity, +200 V 1: fixed at +600 V 2: fixed at +200 V 3: for extremely high humidity, +200 V (default) 4: if not low humidity, +200 V
FIX-TMP	Use it to select a down sequence operating temperature for thick paper. • This is effective if CPMKP-SW is set to ON.	0: 170°C 1: 175°C 2: 180°C 3: 185°C 4: 190°C 5: 195°C
CPMKP-SW	Use it to turn on/off the down sequence for thick paper.	0: off (default) 1: on
IDL-MODE	Use it to select idle rotation mode for the developing assembly. • If the images are distorted or the density is too low (light), select '1' or '2'.	0: auto control by the environment sensor (default) Low humidity: idle rotation. normal/high humidity: start idle rotation when the control panel soft switch is turned on 1: start idle rogation when temperature of fixing roller reaches 100°C 2: start idle rotation when control panel soft switch is turned on

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COPIER>OPTION

Level 3	Description	Remarks
FUZZY	Use it to turn on/off fuzzy control. • This affects the pre-transfer, transfer, and separation charging current levels. • Selecting '1' through '3' will free the mode from the environment sensor.	0: turn on fuzzy control (default) 1: low humidity mode (current level is lower than standard) 2: normal humidity mode 3: high humidity mode (current level higher than standard)
SCANSLCT	Use it to turn on/off the original size detection mechanism for the ADF.	0: off (default) 1: on
OHP-TEMP	Use it to switch control temperature settings for transparency mode.	0: no temperature control for transparency mode (normal temperature control only) 1: use temperature control for transparency mode at "normal control temperature -5°C" 2: use temperature control for transparency mode at "normal control temperature -10°C" 3: use temperature control for transparency mode at "normal control temperature -15°C"
PM-RD-MD	Use it to turn on/off page memory read control.	1: read while writing to page memory (default) 0: read after writing to page memory equivalent of 1 page, thereby preventing jams in memory in response to jams in feeder
OHP-CNT	Use it to turn on/off potential control for transparency mode.	0: use target value obtained by potential control for transparency mode while transparency mode is under way (default) 1: no potential control during transparency mode

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COPIER>OPTION

Level 3	Description	Remarks
CNT-W/ HM	Use it to select potential control mode for a high humidity environment. • Use it to prevent decreases in density caused by a reduced transfer efficiency because of moist paper or a low development efficiency because of moist toner. • Between '2' and '6', the higher the setting, the darker the images.	1: correct laser power/ developing bias to suit environment 0: no correction of target value (default) 2: extremely low humidity 3: low humidity 4: normal humidity 5: high humidity 6: extremely high humidity
PR-SEL	Use it to select uneven potential reduction mode. • Use it to reduce uneven density occurring as a result of primary charging.	0: standard mode (default) 1: reduction 1 2: reduction 2
CNT-W/ PR	Use it to turn on/off density variation mode during printing (PDL input).	0: correct target value to enable variation of density during printing (default) 1: no variation of density during printing
FIX-TMP1	Use it to select a down sequence start temperature for plain paper. • Select a higher temperature for users preferring image quality, while selecting a lower temperature for users preferring copying speed.	0: 170°C 1: 175°C 2: 180°C 3: 185°C 4: 190°C 5: 195°C
TRSW-P-B	Use it to turn on/off the transfer current output correction control mechanism for the trailing edge of paper.	1: no variation of transfer current level (if transfer faults occur along trailing edge) 0: correct transfer current level for trailing edge (default)
SP-MODE	Use it to turn on/of separation current output correction control.	0: standard mode (AC output is 10.5 kvpp; default) 1: low voltage mode (AC output is 9.8 kvpp; if error occurs frequently because of leakage)

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Level 3	Description	Remarks
FTMP-DWM	Use it to select stacking enhancement mode. • Select a timing at which the fixing temperature is reduced to ensure proper stacking in the finisher.	0: no reduction in fixing temperature 1: reduce after passing 1000 sheets or more 2: reduce after passing 1000 sheets or more in high humidity environment 3: reduce after passing 1000 sheets of AB paper (default)
DRUM-CLN	Use it to select drum cleaning enhancement mode. • Change the setting if faults occur in drum cleaning. A higher setting increases performance. • During copying, the drum is stopped for about 1 sec after a specific number of sheets have been processed, thereby allowing the cleaning blade to recover its cleaning performance.	0: after passing 1000 single-sided copies or 500 double-sided copies (default) 1: after passing 1000 single-sided copies or 250 double-sided copies 2: after passing 250 single-sided copies or 250 double-sided copies 3: auto control to suit environment; under high humidity, same as '0'; under low humidity, after passing 250 single-sided copies or 500 double-sided copies
F-GD-CNT	Use it to select fixing inlet guide control mode. • If the images are uneven because of fixing or the images are too light, select '1'.	0: normal control (default) 1: for paper 350 mm or larger, fixing inlet guide is lowered when 1st side is passing; for others, same as normal control.

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Level 3	Description	Remarks
DRM-IDL	Use it to select idle rotation mode for the photosensitive drum. • If the images are distorted or the density is too low (light), select '1' through '4'.	0: no idle rotation (default) 1: for high humidity, initiate idle rotation for 30 sec when control panel soft switch is turned on 2: for high humidity, initiate idle rotation for 2 min when control panel soft switch is turned on 3: independently of environment, initiate idle rotation for 30 sec when control panel soft switch is turned on 4: independently of environment, initiate idle rotation for 2 min when control panel soft switch is turned on

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<USER>
Selecting User-Mode Related Machine Settings

COPIER>OPTION

Level 3	Description	Remarks
COPY-LIM	Use it to change the upper limit for copy counts.	Range : 1 through 999 (default at 999)
SLEEP	Use it to turn on/off the sleep mechanism.	0: off 1: on (default)
WEB-DISP	Use it to turn on/off the fixing cleaning belt length warning message. • Use it to enable or disable indication of a warning on the touch panel when the fixing cleaning belt starts to run out.	0: disable warning 1: enable warning • A warning is indicated when starting service mode after passing 145,000 sheets (A4).
SIZE-DET	Use it to turn on/off the original size detecting mechanism.	0: off 1: on (default)
DATE-DSP	Use it to switch date/time notation.	0: 'YY (MM/DD (default) 1: DD/MM 'YY 2: MM/DD/YY
MB-CCV	Use it to restrict the user of the mail box (by control card).	0: disable restriction (default) 1: enable restriction
PM-DENS	Use it to turn on/off density variation mode during printing (scanner input).	0: off 1: on (default)
PR-D-SEL	Use it to set a density for printing (PDL input).	Range : 0 through 8 (default at 4)

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<CST>
Selecting Cassette-Related Settings

COPIER>OPTION

Level 3	Description	Remarks
U1-NAME U2-NAME U3-NAME U4-NAME	Use it to turn on/off paper notation upon detection of paper size in terms of paper size group (U1 through U4).	0: off ('U1' to 'U4' on the touch panel) 1: on (paper names selected under CST-U1 through -U4)
CST-U1	Use it to select paper notation for paper size group U1.	31: G-LTR (default) 22: K-LGL
CST-U2	Use it to select paper notation used by paper size group U2.	24: FOOLSCAP (default) 26: OFFICIO 27: E-OFFI 33: A-LGL 36: A-OFFL
CST-U3	Use it to select paper notation used by paper size group U3.	34: G-LGL (default) 35: FOLIO 25: A-FLS
CST-U4	Use it to select paper notation used by paper size group U4.	18: LTR (default) 29: A-LTR
P-SZ-C1 P-SZ-C2	Use it t select paper size for the front deck.	6: A4 15: B5 18: LTR
C1-DWSW C2-DWSW DK-DWSW C3-DWSW C4-DWSW	Use it to turn on/off control sequence for thick paper. C1 : front deck (right) C2 : front deck (left) DK: side paper deck C3 : cassette 3 C4 : cassette 4	0: off (default) 1: on

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COPIER>OPTION

Code	Abbreviation	Paper name	Code	Abbreviation	Paper notation
01	A1	A1	21	LGL	LEGAL
02	A2	A2	22	K-LGL	Korean Government
03	A3R	A3R	23	K-LGLR	Korean Government R
04	A3	A3	24	FLSC	Foolscap
05	A4R	A4R	25	A-FLS	Australian Foolscap
06	A4	A4	26	OFI	OFFICIO
07	A5	A5	27	E-OFI	Ecuadorian Officio
08	A5R	A5R	28	B-OFI	Bolivian Officio
09	B1	B1	29	A-LTR	Argentine Letter
10	B2	B2	30	A-LTRR	Argentine Letter-R
11	B3	B3	31	G-LTR	Government Letter
12	B4R	B4R	32	G-LTRR	Government Letter-R
13	B4	B4	33	A-LGL	Argentine Legal
14	B5R	B5R	34	G-LGL	Government Legal
15	B5	B5	35	FOLI	FOLIO
16	11×17	11×17	36	A-OFI	Argentine Officio
17	LTRR	LETTER-R	37		
18	LTR	LETTER	38		
19	STMT	STATEMENT	39		
20	STMTR	STATEMENT-R	40	ALL	

Table 13-F801 Cassette Paper Size Codes

<ACC>
Selecting Accessory-Related Settings

Level 3	Description	Remarks
COIN	Use it to turn on/off coin vender notation. • Use it to change the Control Card Set to notation for a coin vender.	0: for control card (default) 1: for coin vender
DK-P	Use it to select a paper size for the side paper deck.	0: A4 1: B5 2: LTR

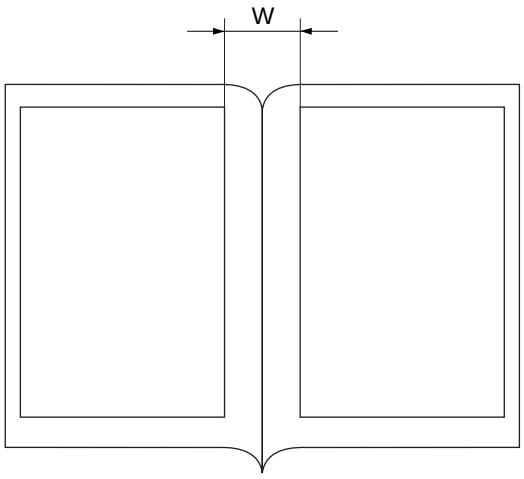
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<FEEDER-Related items>

FEEDER>OPTION
SORTER>OPTION
BOARD>OPTION

Level 3	Description	Remarks
DOC-F-SW	Use it to turn on/off stream reading mode.	0: enable stream reading (default) 1: enable stream reading for large-size only 2: disable stream reading
SIZE-SW	Use it to turn on/off the size mix mechanism (AB and Inch papers).	0: disable detection of mix (default) 1: enable detection of mix

<SORTER-Related items>

Level 3	Description	Remarks
BLNK-SW	Use it to set the margin (W) on both sides of the fold (for the saddle stitcher). 	0: normal width (5 mm) 1: larger width (10 mm)

<BOARD-Relate Items>

Level 3	Description	Remarks
LIPS-HL	Use it to select menu display mode for the LIPS board. • For details, see the Service Manual for each respective board.	0: disable display (default) 1: display mode 1 2: display mode 2

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G. PG Test Print

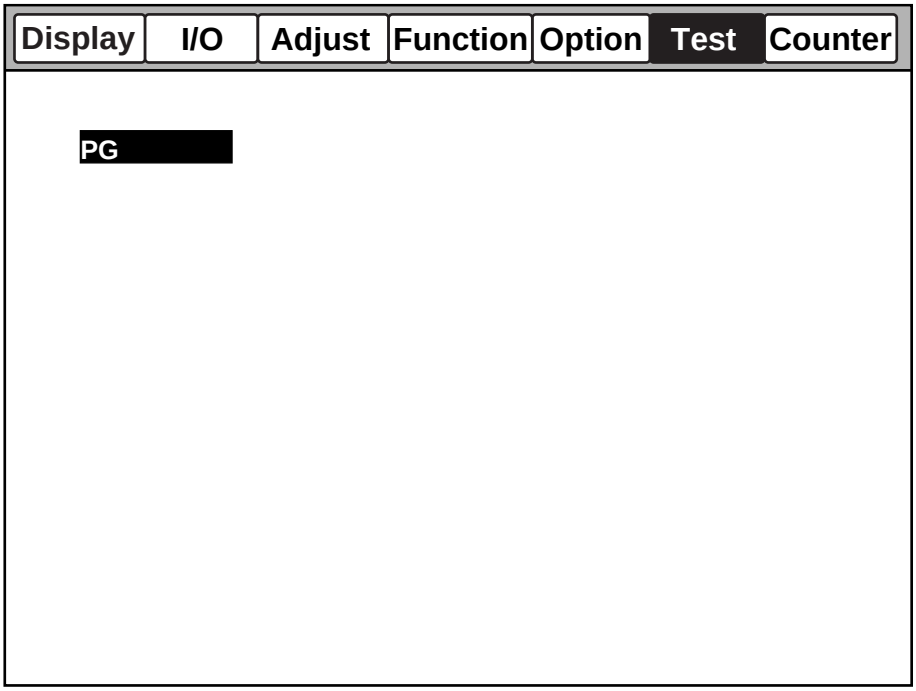


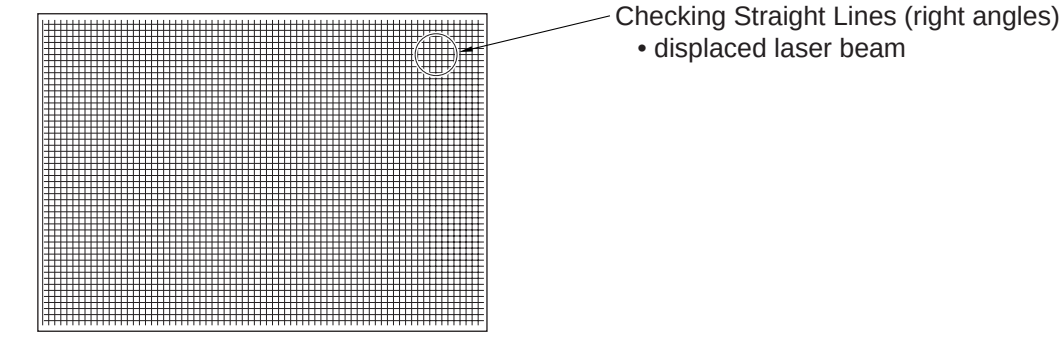
Figure 13-G801

Level 1	Level 2	Level 3	Description
TEST ——	PG ———	TYPE	Use it to generate test prints.

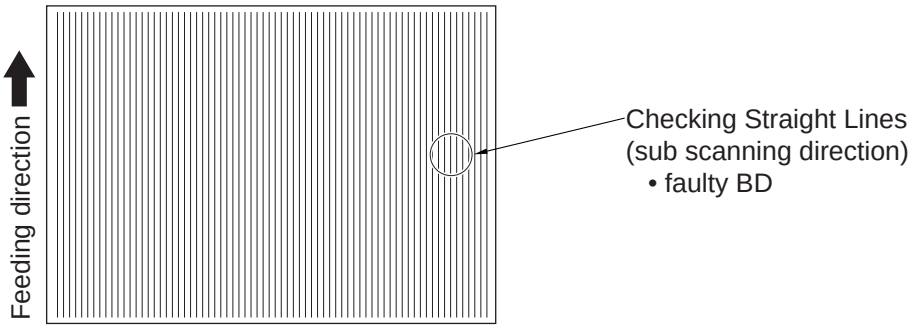
Level 3	Description	Remarks
TYPE	Use it to select and generate a test print (1 thorough 8). Operation 1) Place A3/11×17 or A4/LTR paper in the cassette 3. 2) Select PG, and enter the number of the item using the keypad. 3) Press the OK key. • A test print will be generated.	• The machine will automatically be in copying mode when it is reset to leave the PG screen. • For test printing, the source of paper is the cassette 3.

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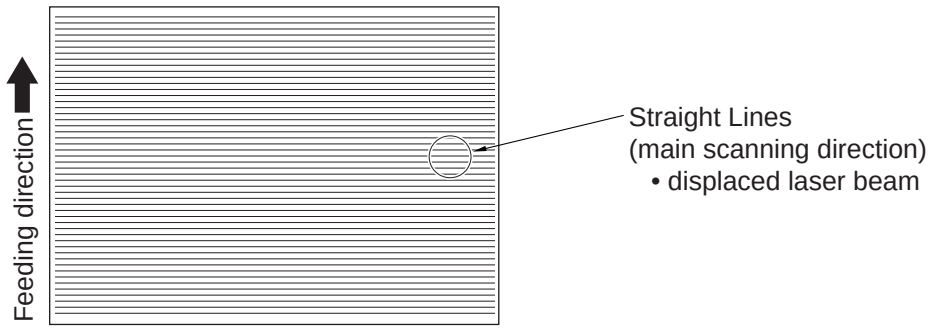
1. Grid (PG-TYPE 1)



2. Vertical Lines (PG-TYPE 2)



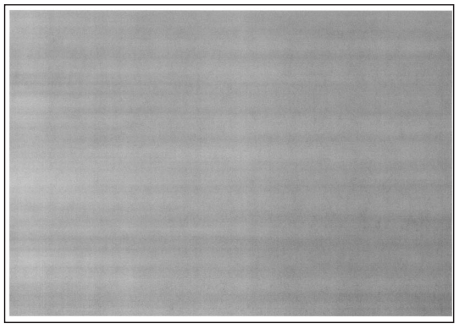
3. Horizontal Lines (PG-TYPE 3)



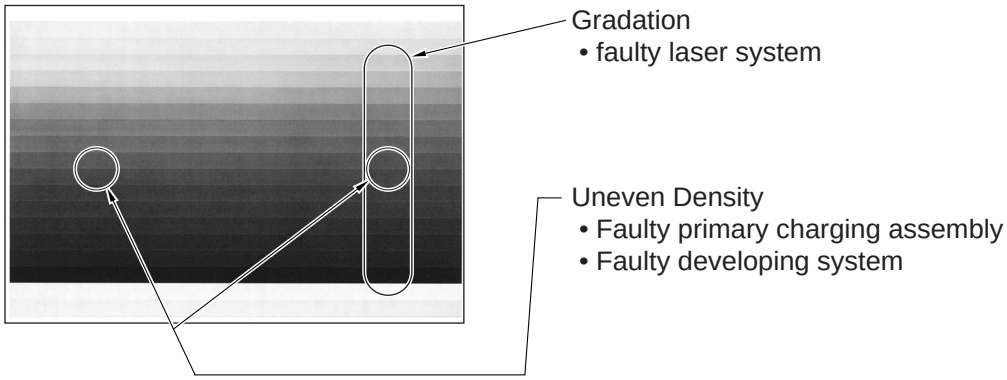
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4. Halftone (PG-TYPE 4)

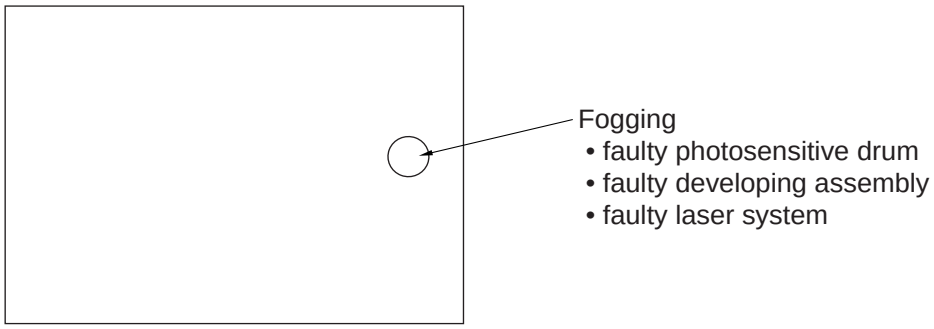
■This print consists of halftone created without passing the paper through the density correction block (image processing). The result depends entirely on the performance of the image formation system.



5. 17-Gradation (PG-TYPE 5)



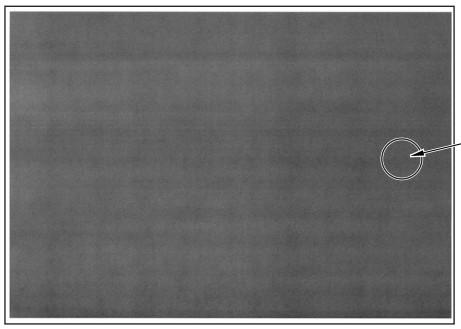
6. Blank (PG-TYPE 6)



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7. Halftone (PG-TYPE 7)

■The print consists of halftone created by passing the paper through the density correction block. The result is dependent on AE and other density correction mechanisms in addition to the performance of the image formation system.

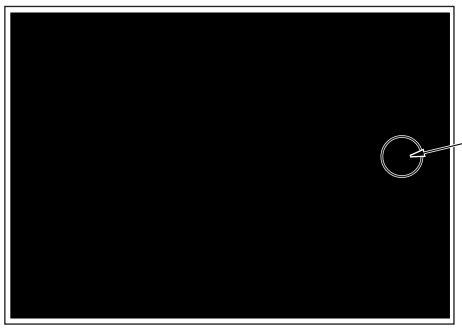


[1] Black Lines
- scratches on drum
- dirt on primary charging wire

[2] Verti cal White Spots
- transfer faulty

[3] Uneven Left/Right Density
- primary charging assembly faults
- developing system faults

8. Solid Black (PG-TYPE 8)



[1] White Spots
- transfer faults

[2] White Lines
- shading faults
  (i.e., dirt on standard white plate)

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H. Counter Mode

Figure 13-H801 shows the Level 2 items screen and the items for COUNTER mode.

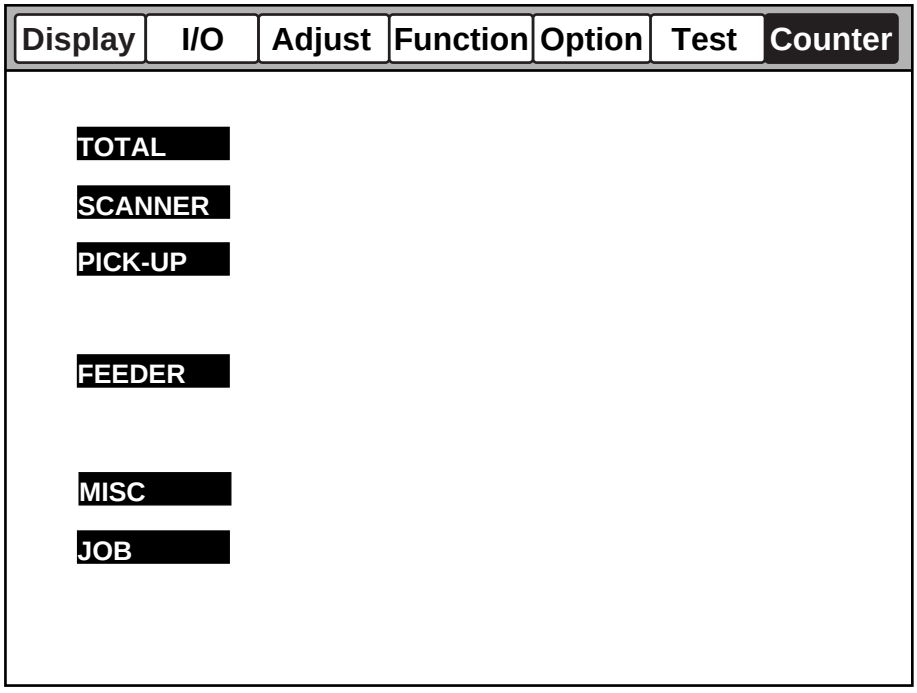


Figure 13-H801

- In this mode, each number represents the number of times the machine has operated.
- To Clear the Counter Readings,

1) Select an item to highlight.
2) Press the Clear key on the control panel.
   The counter will be cleared to return to '00000000'.

- The terms "large" and "small" as used in reference to sizes mean the following:
  Large-size paper is paper whose length is 300 mm or more or paper of a non-default size. (e.g., B4 or larger)
  Small-size paper is paper whose length is less than 300 mm. (e.g., A4 or smaller)

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Items under COUNTER

Level 1	Level 2	Level 3	Description
COUNTER	TOTAL	SERVECE1	total counter 1 for servicing
		SERVECE2	total counter 2 for servicing
		TTL	total counter
		L-TTL	large-size total counter
		S-TTL	small-size total counter
		COPY	total counter (scanner input)
		L-COPY	large-size counter (scanner input)
		S-COYP	small-size counter (scanner input)
		PRNT	total counter (PDL input)
		L-PRNT	large-size total counter (PDL input)
		S-PRNT	small-size total print counter (PDL input)
	SCANNER	SC-TTL	total scan counter for scanner
		SC-STRM	stream reading scan counter for scanner
		SC-NRM	fixed reading scan counter for scanner
	PICKUP	L-C1	front deck (right) pickup counter (large-size)
		S-C1	front deck (right) pickup counter (small-size)
		L-C2	front deck (left) pickup counter (large-size)
		S-C2	front deck (left) pickup counter (small-size)
		L-C3	cassette 3 pickup counter (large-size)
		S-C3	cassette 3 pickup counter (small -size)
		L-C4	cassette 4 pickup counter (large-size)
		S-C4	cassette 4 pickup counter (small-size)
		L-MF	manual feed tray pickup total counter (large-size)
		S-DK	manual feed tray pickup total counter (small-size)
		L-DK	side paper deck pickup total counter (large-size)
		S-DK	side paper deck pickup total counter (small-size)
		L-2-SIDE	double-sided 2nd side pickup total counter (large-size)
		S-2-SIDE	double-sided 2nd side pickup total counter (small-size)
	FEEDER	L-FEED	feeder pickup total counter (large-size original)
		S-FEED	feeder pickup total counter (small-size original)
		TTL-MF	feeder pickup (manual feed) total counter
	MISC	FIX-WEB	fixing cleaning belt counter
		WST-TNR	waste toner counter
	JOB	COPY	copy job operations
		MAIL-BOX	mail box output job operations
		SGNL-CPY	single copy operations
		INTRPT	interrupt copy operations
		OVR10CPY	copy operations for 10 copies or more
		PRINT	print job operations
	PER10DEC	FIX-TH1	main thermistor (TH1) operation time (in sec)
		FIX-TH2	main thermistor (TH2) operation time (in sec)
		FX-TSW	thermal switch (TP1) operation time (in sec)
		PRM-WIRE	primary charging wire high-voltage activation time (in sec)
		PRM-GRID	primary grid wire high-voltage activation time (sin sec)
		TR-WIRE	transfer charging wire high-voltage activation time (in sec)
		PO-WIRE	pre-transfer charging wire high-voltage activation time (sec)

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Items under COUNTER

Level 1	Level 2	Level 3	Description
COUNTER	DURABLE	PT-DRM	photosensitive drum rotation time (in sec)
		SCN-LMP	scanning lamp activation time (in sec)
		DVG-CYL	developing cylinder rotation time (in sec)
		DVG-ROLL	developing assembly roll rotation time (in sec)
		SP-CLAW	cleaner separation claw use time (in sec)
		CLN-BLD	cleaning blade use time (in sec)
		PRM-UNIT	primary charging assembly high-voltage activation time (in sec)
		TR-UNIT	transfer charging assembly high-voltage activation time (in sec)
		PO-UNIT	pre-transfer charging assembly high-voltage activation time (in sec)
		PRI-CLN	primary charging cleaning operations (in number of times)
		TR-CLN	transfer charging cleaning operations (in number of times)
		PO-CLN	pre-transfer charging cleaning operations (in number of times)
		PO-SCRPR	pre-transfer charging scraper use time (in sec)
		FX-UP-RL	upper fixing roller paper passage (in number of sheets)
		FX-LW-RL	lower fixing roller paper passage (in number of sheets)
		DLV-UCLW	delivery upper separation claw paper passage (in number of sheets)
		DLV-LCLW	delivery lower separating claw paper passage (in number of sheets)
		RD-PU-RL	front deck (right) pickup roller paper passage (in number of sheets)
		RD-SP-RL	front deck (right) feeding roller paper passage (in number of sheets)
		LD-PU-RL	front deck (left) pickup roll paper passage (in number of sheet)
		LD-SP-RL	front deck (left) feeding roller paper passage (in number of sheets)
		C3-PU-RL	cassette 3 pickup roller paper passage (in number of sheets)
		C3-SP-RL	cassette 3 feeding roller paper passage (in number of sheets)
		C4-PU-RL	cassette 4 pickup roller paper passage (in number of sheets)
		C4-SP-RL	cassette 4 pickup roller paper passage (in number of sheets)
		M-PU-RL	manual feed tray pickup roller paper passage (in number of sheets)
		M-SP-RL	manual feed tray feeding roller paper passage (in number of sheets)
		PD-PU-RL	side paper deck pick up roller paper passage (in number of sheets)
		PD-SP-RL	side paper deck feeding roller paper passage (in number of sheets)
		RD-PU-CL	front deck (right) pickup clutch operations (in number of times)
		RD-SP-CL	front deck (right) feeding clutch operations (in number of times)
		LD-PU-CL	front deck (left) pickup clutch operations (in number of times)
		LD-PL-CL	front deck (left) feeding clutch operations (in number of times)
		C3-PU-CL	cassette 3 pickup clutch (CL12) operations (in number of times)
		C3-PL-CL	cassette 3 feeding clutch (CL13) operations (in number o times)
		C4-PU-CL	cassette 4 pickup clutch (CL14) operations (in number of times)
		C4-PL-CL	cassette 4 feeding clutch (CL15) operations (in number of times)
		M-PU-CL	manual feed tray pickup clutch (CL7) operations (in number o times)
		M-PL-CL	side paper deck pickup clutch (CL102) operations (in number of times)
		PD-PU-CL	side paper deck feeding clutch (CL 102) operations (in number of times)
		PD-PL-CL	side paper deck feeding clutch (CL 101) operations (in number of times)
		VP1-CL	vertical path 1 clutch (CL8) operations (in number of times)
		VP2-CL	vertical path 2 clutch (CL9) operations (in number of ties)
		REG-CL	registration clutch (CL2) operations (in number of times)
		DUP-C-CL	lower feeding middle clutch (CL16) operations (in number of times)
		DUP-R-CL	lower feeding right clutch (CL17) operation (in number of times)
		INV-FAN	inverter cooling fan (FM9) drive time (in sec)
		PWS-FAN	power supply fan (FM11) operation time (in sec)
		SP-FAN	separation fan (FM13) operation time (in sec)
		LSR-FAN	laser scanner fan (FM14) operation time (in sec)
		FEED-FAN	feeding fan (FM7) operation time (in sec)
		DRM-FAN	drum fan (FM8) operation time (in sec)
		CURL-FAN	de-curling fan (FM6) operation time (in sec)
		POST-FAN	pre-transfer charging assembly fan (FM10) operation time (in sec)

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Items under COUNTR

Level 1	Level 2	Level 3	Description
COUNTER	DURABLE	PRM-FAN	primary charging assembly fan (FM1) operation item (in sec)
		FX-FAN	fixing heat discharge fan (FM2) operation time (in sec)
		SCN-FAN	scanner cooling fan (FM3) operation time (sin sec)
		LSR-FAN	laser driver cooling fan (FM5) operation time (in sec)
		DRM-MTR	drum motor (M0) operation time (in sec)
		FX-MTR	fixing motor (M3) operation time (in sec)
		PICK-MTR	pickup motor (M2) operation time (in sec)
		FEED-MTR	main motor (M1) operation time (in sec)
		LSR-MTR	laser scanner motor (M4) operation time (in sec)
		HD-DRV	hard disk operation time (in sec)
		LSR-DRV	laser operation time (in sec)
		FHTR-M	fixing main heater (H1) operation time (in sec)
		FHTR-S	fixing sub heater (H2) operation time (in sec)
		B-LIGHT	control panel back light activation time (in sec)
		NON-SORT	non-sort path paper passage (in number of sheets)
		SORT	sort path paper passage (in number of sheets)
		INSERTER	inserter paper passage (in number of sheets)
		FOLD	folding unit path paper passage (in number of sheets)
		SADDLE	saddle paper passage (in number of sheets)
		SDL-STPL	saddle stapling operations (in number of times)
		PUNCH	punching operations (in number of operations)
		FIN-STPR	finisher stapler operations (in number of times)

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IX . SELF DIAGNOSIS

The microprocessor on the copier's DC controller PCB is equipped with a mechanism that checks the state of the copier (especially its sensors). It runs a check as needed and, upon detection of a fault, indicates a code on the control panel.

A. Copier Self Diagnosis

Code	Cause	Description
E000 (NOTE 1)	• The main thermistor (TH1) has poor contact or an open circuit. • The fixing heater (H1, H2) has an open circuit. • The thermal switch (TS1) has an open circuit. • The SSR is faulty. • The DC control PCB is faulty. • The sub thermistor (TH2) has poor contact or an open circuit. After indicating E000, the power switch turns off in about 5 sec.	• The temperature of the upper fixing roller does not reach 70°C within 3 min 30 sec after power-on.
E001 (NOTE 1)	• The main thermistor (TH1) has a short circuit. • The SSR is faulty. • The DC controller PCB is faulty. • The sub thermistor (TH2) has detected overheating.	• The temperature of the upper fixing roller exceeds 230°C for 2 sec or more. • The difference in detection temperature between the main thermistor (TH1) and the sub thermistor (TH2) is 50°C for 1 sec or more.
E002 (NOTE 1)	• The main thermistor (TH1) has poor contact or an open circuit. • The fixing heater (H1, H2) has an open circuit. • The thermal switch (TS1) has an open circuit. • The SSR is faulty. • The DC controller PCB is faulty.	• The temperature of the upper fixing roller does not reach 100°C within 2.5 min after it has exceeded 70°C. • The temperature of the upper fixing roller does not reach 150°C within 2.5 min after it has exceeded 100°C.
E003 (NOTE 1)	• The main thermistor (TH1) has poor contact or an open circuit. • The fixing heater (H1, H2) has an open circuit. • The thermal switch (TS1) has an open circuit. • The SSR is faulty. • The DC controller PCB is faulty.	• The temperature of the upper fixing roller drops to 70°C or less for 2 sec after it has reached 100°C.
E004 (NOTE 1)	• The SSR is faulty. • The DC controller PCB is faulty.	• The SSR used to drive the fixing heater has a short circuit.
E005	• The cleaning belt inside the fixing assembly has been taken up. • The fixing cleaning belt length sensor (PS7) is faulty. • The DC controller PCB is faulty.	• The cleaning belt inside the fixing assembly has been taken up more than a specific length.

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Code	Cause	Description
E010	• The main motor (M1) is faulty. • The DC controller PCB is faulty.	• No clock pulse arrives for 2 sec or more after the output of the main motor drive signal.
E012	• The drum motor (M0) is faulty. • The DC controller PCB is faulty.	• No PLL lock signal (MOLCK) arrives for 2 sec or more after the output of the drum motor drive signal.
E013	• The waste toner feed screw has a fault. • The DC controller PCB is faulty.	• The waste toner feed screw cannot rotate, and the detecting switch (MSW2) has been pressed multiple times within a specific period of time.
E014	• The fixing motor (M3) is faulty. • The DC controller PCB is faulty.	• No PLL lock signal (M1-FG) arrive for 2 sec or more after the output of the fixing motor drive signal.
E015	• The pickup motor (M2) is faulty. • The DC controller PCB is faulty.	• No clock pulse arrives for 2 sec or more after the output of the pickup motor drive signal.
E019	• The waste toner case is full.	• As many as about 50,000 pages worth of images have been formed (in terms of A4) without disposing of the waste toner after a waste toner case full condition (message indicated) has been identified.
E020	• The hopper inside toner feeder motor (M18) is faulty. • The magnet roller drive clutch (CL1) is faulty. • The developing assembly inside toner sensor (TS3) is faulty. • The DC control PCB is faulty. • The hopper connector is disconnected.	• The absence of toner inside the developing assembly has been detected for 2 min or more after supplying the developing assembly with toner.
E025	• The cartridge inside toner feeder motor (M6) is faulty. • DC controller PCB is faulty.	• An overcurrent to the cartridge inside toner feeder motor (M6) has been detected twice for 10 sec each by the DC controller PCB. (In response to the first detection, the copier will indicate "Shake the Toner Case.")
E030	• The toner copy counter has an open circuit. • The DC controller PCB is faulty.	• The total copy counter is identified as having an open circuit when it is driven.
E031	• The option counter has an open circuit. • The DC controller PCB is faulty.	• The options counter is identified as having an open circuit when it is driven.
E032	• The Copy Data Controller-A1 or the Remoto Diagnostic Device II is faulty. • The DC controller PCB is faulty.	• The Copy Data Counter-A1 or the Remoto Diagnostic Device II counter function fails to operate. • The Copy Data Controller-A1 or the Remoto Diagnostic Device II is disconnected.

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Code	Cause	Description
E043	• The deck main motor (M101) is faulty. • The side deck driver PCB is faulty. • The DC controller PCB is faulty.	• No PLL lock signal (DMPLK) arrives for 2 sec or more after the input of the PLL lock signal (DMPLK).
E051	• The horizontal registration sensor (PS18) is faulty. • The horizontal registration motor (M15) is faulty. • The DC controller PCB is faulty.	• The home position signal is not detected in 5 sec while the horizontal registration motor (M15) drive signal is being generated.
E060	• The primary charging wire cleaner motor (M8) is faulty. • The primary charging wire cleaner home position detecting switch (MSW4) is faulty. • The DC controller PCB is faulty.	• The home position is not detected within 60 sec after wire cleaning has been started.
E063	• The transfer/separation charging wire cleaner motor (M9) is faulty. • The transfer/separation charging wire cleaner home position detecting switch (MSW6) is faulty. • The DC controller PCB is faulty.	• The home position is not detected within 60 sec after wire cleaning has been started.
E065	• The primary charging assembly is faulty. • The HV-DC PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The high-voltage to the primary charging assembly is faulty (leakage).
E066	• The pre-transfer charging wire cleaner motor (M7) is faulty. • The pre-transfer charging wire cleaner home position detecting switch (MSW3) is faulty. • The DC controller PCB is faulty.	• The home position cannot be detected within 60 sec after wire cleaning has been started.
E067	• The HV-DC PCB is faulty. • The HV-AC PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• Of the primary high-voltage, pre-transfer high-voltage, transfer high-voltage, and separation high-voltage, a fault is found in two or more at the same time.
E068	• The HV-DC PCB is faulty. • The HV-AC PCB is faulty. • The separation charging assembly is faulty. • The wiring is faulty (short circuit, open circuit).	• The high-voltage output to the separation charging assembly has a fault (leakage).
E069	• The HV-DC PCB is faulty. • The transfer charging assembly is faulty. • The wiring is faulty (short circuit, open circuit).	• The high-voltage to the transfer charging assembly has a fault (leakage).

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Code	Cause	Description
E100	• The BD PCB is faulty. • The image processor PCB is faulty. • The DC controller PCB is faulty. • The laser unit is faulty. • The laser driver PCB 1 is faulty. • The laser driver PCB 2 is faulty. • The wiring is faulty (short circuit, open circuit).	• The BD signal does not arrive within 1 sec after the output of the laser drive signal. • The BD signal does not arrive for 1 sec or more while the laser is on.
E102	• The image processor PCB is faulty. • The laser driver PCB 1 is faulty. • The wiring is faulty (short circuit, open circuit).	• The laser power data cannot be written to the laser driver PCB 1 when starting copying or printing operation.
E110	• The laser scanner motor (M4) is faulty. • The laser scanner driver is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The constant speed rotation signal (LM-RDY) does not arrive for 15 sec or more after the output of the laser scanner motor (M4) drive signal.
E111	• The laser scanner motor (M4) is faulty. • The DC controller PCB is faulty • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM14LCK) is detected for 5 sec or more while the laser scanner fan (FM14) is being driven.
E121	• The laser driver cooling fan (FM5) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM5LCK) is detected for 5 sec or more while the laser driver cooling fan (FM5) is being driven.
(E202) No code. Keys disabled. (Note 2)	• The scanner motor (M5) is faulty. • The scanner home position sensor (PS1) is faulty. • The DC controller PCB is faulty.	• The scanner home position is not detected within a specific period of time when the power switch or the Copy Start key is pressed.
(E204) No code. Keys disabled. (Note 2)	• The scanner motor (M5) is faulty. • The image leading edge sensor (PS3) is faulty. • The DC controller PCB is faulty.	• No image signal is detected while the scanner is moving forward in fixed reading mode or when the home position is being detected. • No image signal arrives from the ADF while in stream reading mode.
E211	• The fluorescent lamp heater inside thermistor is faulty. • The light intensity control PCB is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The temperature around the fluorescent lamp does not exceed 10°C 2 sec after the fluorescent lamp heater has turned on at power-on. • The temperature around the fluorescent lamp is 0°C or less at power-on.
E215	• The fluorescent lamp heater inside thermistor is faulty. • The light intensity control PCB is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The temperature around the fluorescent amp is 170°C or more when the fluorescent lamp is off.

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Code	Cause	Description
E218	• The fluorescent lamp is mounted wrongly.	• The absence of the fluorescent lamp is detected at power-on.
E219	• The fluorescent lamp is faulty. • The fluorescent lamp heater inside thermistor is faulty.	• The temperature around the fluorescent lamp is 170°C or more while the fluorescent lamp is on.
E220	• The fluorescent lamp is faulty. • The light intensity sensor is faulty. • The intensity control PCB is faulty. • The inverter PCB is faulty. • The DC controller PCB is faulty.	• The light intensity does not reach a specific level within 10 sec after the fluorescent lamp has been turned on. • The activation detection signal (FL-DTCT) arrives within 5 sec after the fluorescent lamp has been turned off. • The activation detection signal (FL-DTCT) does not arrive within 60 se after the fluorescent lamp has been turned on during shading adjustment.
E222	• The fluorescent lamp is faulty. • The light intensity control PCB is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The light intensity does not reach a specific level within 10 sec after the fluorescent lamp has been turned on. (However, within 60 sec if the room temperature is 10°C or less.) • The activation signal is not turned off 5 sec after the fluorescent lamp has been turned off. • The activation signal does not arrive with 60 sec after the fluorescent lamp has been turned on during shading adjustment.
E226	• The scanner cooling fan (FM3) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM3LCK) is detected for 5 sec or more while the scanner cooling fan (FM3) is being driven.
E240	• The DC controller PCB is faulty.	• An error in communication occurs in the microprocessor on the DC controller PCB.
E241	• The image processor PCB is faulty. • The original orientation detection PCB is faulty.	• The orientation of the original is not identified when the second or subsequent original must be read. • The orientation of the last original is not detected 5 sec or more after the last original has been read.
E243	• The DC controller PCB is faulty. • The control panel PCB is faulty.	• A communication error has occurred between the microprocessor on the DC controller PCB and the microprocessor on the control panel PCB.
E251	• The inverter cooling fan (FM9) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock detection signal (FM9LCK) is generated 5 sec or more while the inverter cooling fan (FM9) is being driven.

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Code	Cause	Description
E302	• The CCD PCB is faulty. • The image processor PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The shading end signal from the CCD PCB does not reach the image processor PCB during shading operation.
E320	• The CCD PCB is faulty. • The image processor PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The image read end signal from the CCD PCB does not reach the image processor PCB within 60 sec during image reading operation.
E601	• The image processor PCB is faulty. • The MFC PCB is faulty. • The wiring is faulty (short circuit, open circuit). • The image server (hard disk) is faulty.	• The MFC PCB has detected an error in control data during image transfer between the MFC PCB and the image server. • The image processor PCB has detected an error in image transfer between the MFC PCB and the image processor PCB.
E602	• The image processor PCB is faulty. • The MFC PCB is faulty. • The wiring is faulty (short circuit, open circuit). • The image server (hard disk) is faulty.	• An error has been detected in the image data when the image processor PCB writes to or reads from the image server.
E677	• A printer board (accessory) is faulty. • The MFC PCB is faulty. • The system motherboard is faulty.	• An error has occurred in the communication between a printer board (accessory) and the MFC PCB.
E710	• The DC controller PCB is faulty. • The ADF controller PCB is faulty. • The finisher controller PCB is faulty.	• The IPC (IC12) on the DC controller PCB cannot be initialized at power-on.
E711	• The DC controller PCB is faulty. • The ADF controller PCB is faulty. • The finisher controller PCB is faulty.	• The IPC (IC12) on the DC controller PCB is out of order at power-on.
E712	• The ADF controller PCB is faulty. • The connector has poor contact. • The 24-V power supply is faulty. • The DC controller PCB is faulty.	• The communication control IC on the ADF controller PCB is out of order.
E713	• The finisher controller PCB is faulty. • The connector has poor contact. • The 24-V power supply is faulty. • The DC controller PCB is faulty.	• The communication control IC on the finisher controller PCB is out of order.
E717	• The Copy Data Controller-A1 or the Remoto Diagnostic Device II is faulty. • The wiring is faulty (short circuit, open circuit).	• The PC of the Copy Data Controller-A1 or the Remoto Diagnostic Device II is out of order.

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Code	Cause	Description
E800	• The auto power-off circuit has an open circuit. • The DC controller PCB is faulty.	• The auto power-off circuit has an open circuit. • The auto power-off signal has been detected twice or more within 2 sec.
E804	• The power supply cooling fan (1/2) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM1LCK, FM2LCK) is detected for 5 sec or more while the power supply cooling fan (1/2) is being driven.
E805	• The fixing assembly heat discharge fan (FM2) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (shorting, open circuit).	• The lock signal (FM2LCK) has been detected 5 sec or more while the fixing assembly heat discharge fan (FM2) is being driven.
E820	• The drum fan (FM8) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM8LCK) has been detected for 5 sec or more while the drum fan (FM8) is being driven.
E823	• The pre-transfer charging assembly fan (FM10) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM10LCK) is detected for 5 sec or more while the pre-transfer charging assembly fan (FM10) is being driven.
E824	• The primary charging fan (FM1) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM1LCK) is detected for 5 sec or more while the primary charging assembly fan (FM1) is being driven.
E830	• The separation fan (FM13) is faulty. • The DC controller PCB is faulty. • The wiring is faulty (short circuit, open circuit).	• The lock signal (FM13LCK) is detected for 5 sec or more while the separation fan (FM13) is being driven.

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Notes:

1. When the self diagnostic mechanism has turned on, you can reset the copier by turning on its power switch once. This, however, is not true of E000, E001, E002, E003, E004, E005, E013, or E020. (Otherwise, the user could reset the copier while a thermistor may have an open circuit, causing the fixing roller to suffer thermal damage or toner inside the hopper to overflow.)
   If the error is E000 through E003, the power switch will turn off automatically in about 20 sec if you turn it on without resetting. In the case of E004, on the other hand, the power switch will turn off in about 5 sec after E000 is indicated if you turn on the power switch without resetting.
   You will have to initialize the RAM on the DC controller PCB if E000, E001, E002, E003, E004, E005, E013, or E020 is indicated.
   Resetting the Copier
   1) Execute COPIER>FUNCTION>CLEAR>ERR in service mode.
   2) Press the Reset key twice to return to the Copy Mode screen.
   3) Turn off and then on the main power switch.
2. For E202, and E204, you can check codes in service mode (COPIER>DISPLAY> ERR).
   In the case of E202 or E204, the control panel will show the following:

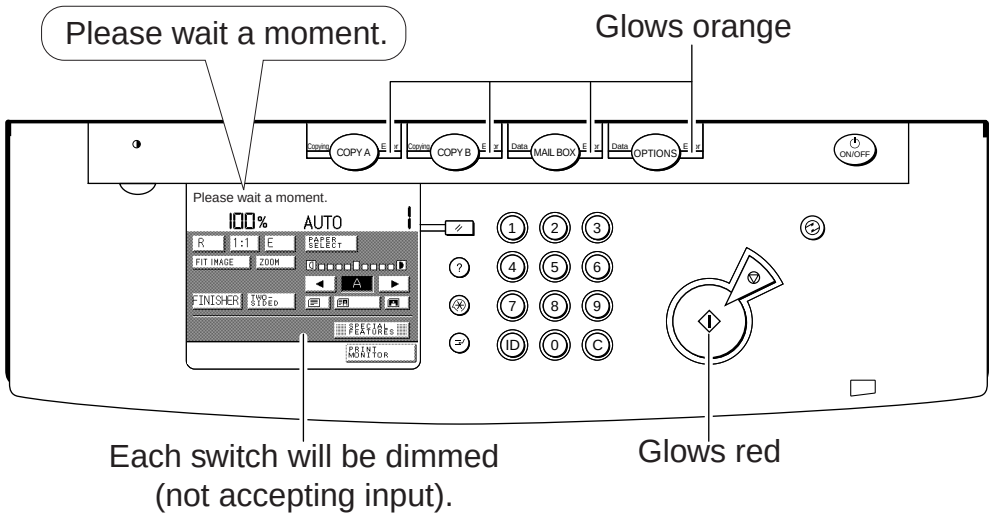


Figure 13-901

B. ADF Self Diagnosis

Code	Cause	Description
E400	• The communication cable between the machine and the copier is faulty. • The ADF controller PCB is faulty.	• The communication between the machine and the copier is disrupted for 5 sec or more while the machine is in standby. • The communication between the machine and the copier is disrupted for 0.5 sec or more while the ADF is in operation.
E402	• The belt motor (M2) is faulty. • The belt motor clock sensor (PI1) is faulty. • The ADF controller PCB is faulty.	• No clock signal is generated for 100 msec while the belt motor drive signal is being generated.
E404	• The delivery motor (M5) is faulty. • The delivery motor clock sensor (PI11) is faulty. • The ADF controller PCB is faulty.	• No clock signal is generated for 200 msec while the delivery motor drive signal is being generated.
E405	• The separation motor (M4) is faulty. • The separation motor clock sensor (PI2) is faulty. • The ADF controller PCB is faulty.	• No lock signal is generated for 200 msec while the separation motor drive signal is being generated.
E410	• The pickup motor (M3) is faulty. • The pickup roller height sensor 1 (PI8) is faulty. • The pickup roller height sensor 2 (PI9) is faulty. • The pickup roller home position sensor (PI7) is faulty. • The ADF controller PCB is faulty.	• The pickup roller height sensor 1 (PI8) or 2 (PI9) does not generate a signal within 2 sec after the pickup motor has been driven. • The pickup roller home position sensor (PI7) does not generate a signal within 2 sec after the pickup motor has been driven.
E420	• The back-up data cannot be read, or the data which has been read has an error.	• The back-up data cannot be read (twice) when the copier is turned on, or the data which has been read contains an error.

Caution:
If the self-diagnosis mechanism has turned on, you can reset the copier by turning off the power switch once.
You may continue to make copies when the ADF is out of order: disconnect the lattice connector on the ADF side, open the ADF, and place an original on the copyboard glass.

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C. Finisher Self Diagnosis

Code	Cause	Description
E500	• The data communication has an error.	• The communication between the copier and the machine has been interrupted and, in addition, is not corrected after 5 sec during which re-transmission was tried. • After the above condition, a recovery attempt has been tried three times in 5 sec.
E501		• The communication between the master CPU (IC101) and the slave CPU (IC121) has been disrupted.
E505	• The backup RAM (EEPROM) is faulty.	• The check sum has an error at power-on.
E510	• The inlet motor (M1) is faulty.	• The clock pulses from the inlet motor are 50 mm/sec or less for 1 sec or more while the motor is in operation.
E514	• The stack delivery motor (M7) is faulty. • The stack delivery motor clock sensor (PI12) is faulty.	• The clock pulses from the stack delivery motor clock sensor are 50 mm/sec or less for 1 sec or more while the motor is in operation.
E537	• The front jogging plate motor (M4) is faulty. • The front jogging plate home position sensor (PI7) is faulty.	• The front jogging plate does not leave the front jogging plate home position sensor when the front jogging plate motor has been driven for 4 sec. • The front jogging plate does not return to the front jogging plate home position sensor after the front jogging plate motor has been driven for 4 sec.
E530	• The rear jogging plate motor (M5) is faulty. • The rear jogging plate home position sensor (PI9) is faulty.	• The rear jogging plate does not leave the rear jogging plate home position sensor when the rear jogging plate motor has been driven for 4 sec. • The rear jogging plate does not return to the rear jogging plate home position sensor after the rear jogging plate motor has been driven for 4 sec.
E531	• The stapler motor (M11) is faulty. • The stapler home position detecting sensor (PI9) is faulty. • The swing guide safety switch (MSW2) is faulty • The stapler safety switch (front; MSW8) is faulty. • The stapler safety switch (rear; MSW9) is faulty.	• The stapler does not leave the stapler home position after the stapler motor has been driven for 0.5 sec. • The stapler does not return to the stapler home position when the stapler motor has been driven for 0.5 sec.

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Code	Cause	Description
E532	• The stapler shift motor (M10) is faulty. • The stapler shift home position sensor (PI7) is faulty. • The swing guide safety switch (MSW2) is faulty • The stapler safety switch (front; MSW8) is faulty. • The stapler safety switch (rear; MSW9) is faulty.	• The stapler shift home position sensor does not turn off when the stapler shift motor has been driven for 4 sec. • The stapler shift home position is not detected when the stapler shift motor has been driven for 4 sec.
E535	• The swing motor (M8) is faulty. • The swing guide open sensor (PI16) is faulty.	• The swing guide closed sensor does not detect the swing guide when the swing motor has been driven for 2 sec. (detail code FF)
	• The swing motor (M8) is faulty. • The swing guide closed sensor (P15) is faulty.	• The swing guide closed sensor does not detect the swing guide when the swing motor has been driven for 2 sec. (detail code 01)
E542	• The tray B lift motor (M12) is faulty. • The tray B lock sensor (PI23) is faulty. • The tray B lower limit sensor (PI24) is faulty. • The tray B upper position sensor (PI20) is faulty. • The tray lower position sensor (PI21) is faulty.	• The lifter operation does not end within 25 sec after the tray lift motor has been driven. • The clock pulses from the tray idle rotation sensor are absent for 250 msec or more while the motor is rotating. • The input from the tray B upper position sensor (PI20) is '0' at power-on (i.e., the tray B is above the tray paper sensor PCB).
E551	• The power supply fan (FM1) is faulty.	• The power supply fan is at rest for 2 sec.
E577	• The paddle motor (M9) is faulty. • The paddle home position sensor (PI14) is faulty.	• The paddle home position sensor does not detect the paddle for 5 sec after the motor has been started.
E583	• The tray auxiliary plate motor (M6) is faulty. • The tray auxiliary plate retraction sensor (PI11) is faulty.	• The tray auxiliary plate retraction sensor does not turn on within 2 sec after the motor has been started when the tray auxiliary plate is being retracted.

■ Resetting the Machine

• If the copier is making copies,
  [1] The copier indicates an error code and the message "Turn On the Power Once Again."
  [2] After the jam reset mechanism has been activated, the copier runs a self check: if the result is good, the machine is reset; if not good, the machine enters down state* (indicated on the copier's control panel as "E5XX").

• If the copier is not making copies,
  [1] The copier indicates an error code and the message "Turn On the Power Once Again."
  [2] When the power has been turned off and then on, the copier runs a self check: if the result is good, the machine is reset; if not good, the machine enters down state* (indicated on the copier's control panel as "E5XX").

*State in which "E" is indicated.

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APPENDIX

A. GENERAL TIMING CHART A-1
B. LIST OF SIGNALS/ ABBREVIATIONS A-3
C. GENERAL CIRCUIT DIAGRAM A-9
D. SPECIAL TOOLS TABLE A-17
E. SOLVENTS/OILS A-19

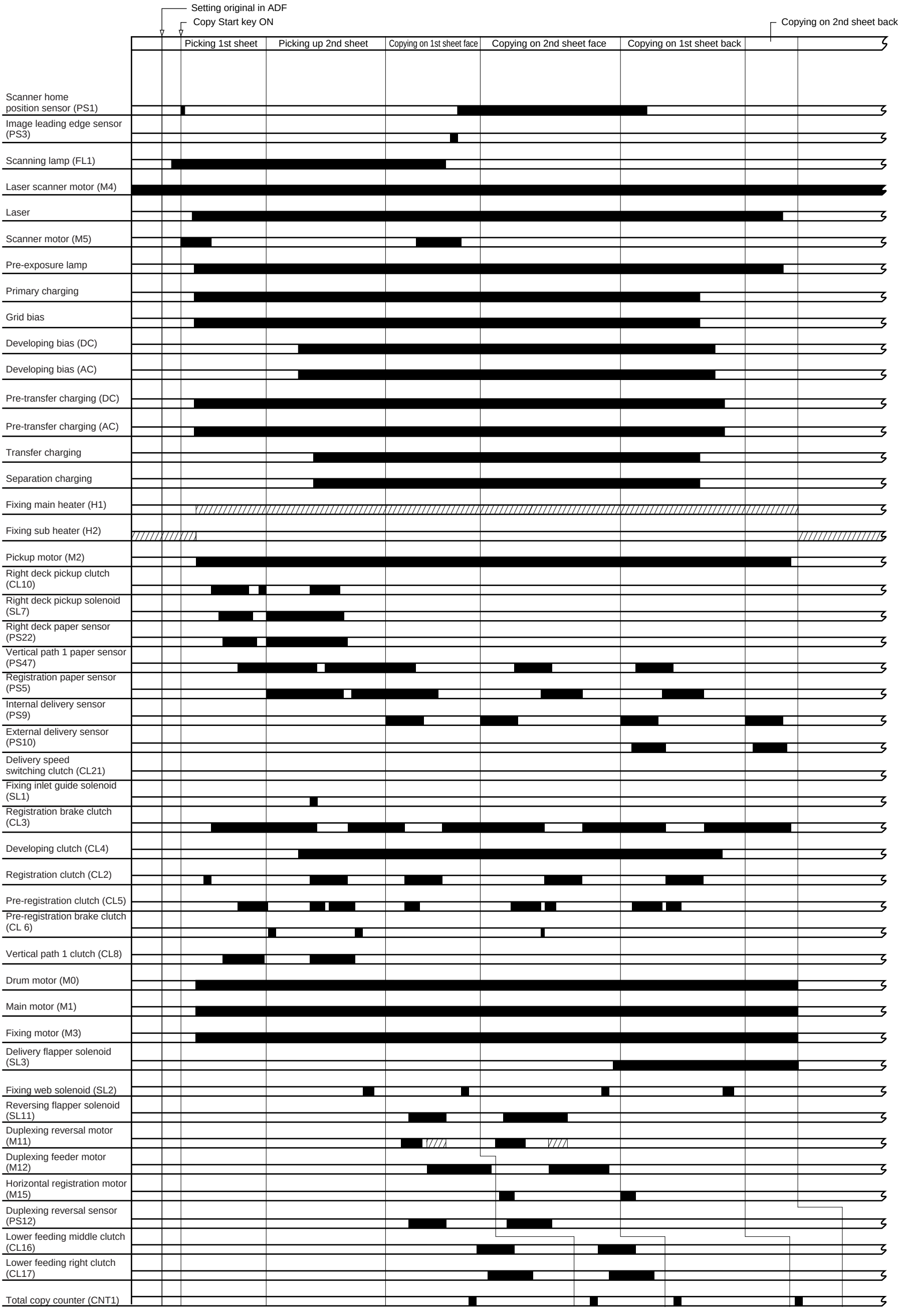
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B. LIST OF SIGNALS/ABBREVIATIONS

The following is a list of the signals and abbreviations used in this chapter and the circuit diagrams.

Reference:

The abbreviations in parentheses are electrical signals, but are analog signals, which cannot be expressed in terms of '1' or '0'. Others are digital signals, which may be expressed in terms of '1' or '0'.

CL1-ON	hopper inside magnet roll clutch drive command
CL2-ON	registration roller clutch drive command
CL3-ON	registration roller brake clutch drive command
CL4-ON	developing clutch drive command
CL5-ON	pre-registration roller clutch drive command
CL6-ON	pre-registration roller brake clutch command
CL7-ON	multifeeder pickup clutch drive command
CL8-ON	vertical path 1 roller clutch drive command
CL9-ON	vertical path 2 roller clutch drive command
CL10-ON	deck (right) pickup clutch drive command
CL11-ON	deck (left) pickup clutch drive command
CL12-ON	cassette 3 pickup clutch drive command
CL13-ON	vertical path 3 roller clutch drive command
CL14-ON	cassette 4 pickup clutch drive command
CL15-ON	vertical path 4 roller clutch drive command
CL16-ON	lower feeding middle roller clutch drive command
CL17-ON	lower feeding right roller clutch drive command
CL18-ON	multifeeder feeding roller clutch drive command
CL19-ON	deck (left) feeding roller drive command
CL21-ON	delivery speed switching clutch drive command
CNT1D	total copy counter drive command
CNT2D	options counter drive command
CNT2-B0	count selection signal 0
CNT2-B1	count selection signal 1
CNT3D	print counter drive command
DUPF-A	duplexing feeder motor phase-A excitation signal
DUPF-B	duplexing feeder motor phase-B excitation signal
DUPF-OFF	duplexing feeder motor drive command

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DUPI-A	duplexing reversal motor phase-A excitation signal
DUPI-B	duplexing reversal motor phase-B excitation signal
DUPI-OFF	duplexing reversal motor drive command
FL-GAIN	scanning lamp light intensity correction signal
FL-REF	scanning lamp light intensity reference signal
FL-TH	fluorescent lamp heater temperature detection signal
FM1LCK	primary charging assembly fan constant speed rotation detection signal
FM1-ON	primary charging assembly fan drive command
FM2LCK	fixing assembly heat discharge fan constant speed rotation detection signal
FM2-ON	fixing assembly heat discharge fan drive command
FM3LCK	scanner cooling fan constant speed rotation detection signal
FM3-ON	scanner cooling fan drive command
FM4LCK	stream reading fan constant speed rotation detection signal
FM4-ON	stream reading fan drive command
FM5LCK	laser driver cooling fan constant speed rotation detection signal
FM5-ON	laser driver cooling fan drive command
FM6LCK	de-curling fan constant speed rotation detection signal
FM6-ON	de-curling fan drive command
FM7LCK	feeding fan constant speed rotation detection signal
FM7-ON	feeding fan drive command
FM8LCK	drum fan constant speed rotation detection signal
FM8-ON	drum fan drive command
FM9LCK	inverter cooling fan constant speed rotation detection signal
FM9-ON	inverter cooling fan drive command
FM10LCK	pre-transfer charging assembly fan constant speed rotation detection signal
FM10-ON	pre-transfer charging assembly fan drive command
FM11LCK	power supply cooling fan 1 constant speed rotation detection signal
FM11-ON	power supply cooling fan 1 drive command
FM12LCK	power supply cooling fan 2 constant speed rotation detection signal
FM12-ON	power supply cooling fan 2 drive command
FM13LCK	separation fan contestant rotation detection signal
FM13-ON	separation fan drive command
FM14LCK	laser scanner fan constant speed rotation detection signal
FM14-ON	laser scanner fan drive command
HEAT-ON	fluorescent lamp heater drive command
MO-LCK	drum motor constant speed rotation detection signal

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MO-ON	drum motor drive command
M1-FG	main motor rotation detection signal
M1-ON	main motor drive command
M2-FG	pickup motor rotation detection signal
M2-ON	pickup motor drive command
M3LCK	fixing motor constant speed rotation detection signal
M3-ON	fixing motor drive command
M4F/H	laser scanner motor high-speed rotation control signal
M4LCK	laser scanner motor constant speed rotation detection signal
M4-ON	laser scanner motor drive command
M6+	cartridge inside toner feeder motor power signal
M6-	cartridge inside toner feeder motor power signal
M7FW	pre-transfer charging wire cleaning motor CW rotation control signal
M7RV	pre-transfer charging wire cleaning motor CCW rotation control signal
M8FW	primary charging wire cleaning motor CW rotation control signal
M8RV	primary charging wire cleaning motor CCW rotation control signal
M9FW	transfer/separation charging wire cleaning motor CW rotation control signal
M9RV	transfer/separation charging wire cleaning motor CCW rotation control signal
M13-ON	deck (right) lifter motor drive command
M14-ON	deck (left) lifter motor drive command
M16-ON	cassette 3 lifter motor drive command
M17-ON	cassette 4 lifter motor drive command
M18+	hopper inside toner feeder motor power signal
M18-	hopper inside toner feeder motor power signal
MHDTC	fixing main heater power detection signal
MH-ON	fixing main heater drive command
MSW1S	toner cartridge detection signal
MSW2S	waste toner clogging detection signal
MSW3S	pre-transfer charging wire cleaning home position detection signal
MSW4S	primary charging wire cleaner home position detection signal
MSW5S	multifeeder cover open/closed detection signal
MSW6S	transfer/separation charging wire cleaner home position detection signal
MSW7S	front cover open/closed detection signal
M-TEMP	fixing main thermistor temperature detection signal
PEXP	pre-expose lamp drive command
POT-ON	drum potential control drive command

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POT-SG	drum potential signal
PS1S	scanner home position detection signal
PS3S	image leading edge detection signal
PS4S	copyboard cover open/closed detection signal
PS5S	registration roller paper detection signal
PS6S	fixing claw jam detection signal
PS7S	fixing cleaning belt length detection signal
PS8S	fixing cleaning belt length warning detection signal
PS9S	internal delivery assembly paper detection signal
PS10S	external delivery assembly paper detection signal
PS11S	fixing/feeding unit outlet paper detection signal
PS12S	duplexing reversal paper detecting signal
PS13S	U-turn paper detection signal
PS14S	pre-confluence paper detection signal
PS15S	post-confluence paper detection signal
PS16S	reversal paper detection signal
PS17S	multifeeder paper detection signal
PS18S	horizontal registration paper detection signal
PS19S	waste toner case full detection signal
PS20S	deck (right) pickup detection signal
PS21S	deck (right) lifter detection signal
PS22S	deck (right) paper detection signal
PS23S	deck (right) open/closed detection signal
PS24S	deck (right) limit detection signal
PS25S	deck (left) pickup detection signal
PS26S	deck (left) feeding paper detection signal
PS27S	deck (right) feeding paper detection signal
PS28S	fixing/feeding unit releasing lever detection signal
PS31S	deck (left) lifter detection signal
PS32S	deck (left) paper detection signal
PS33S	deck (left) open/closed detection signal
PS34S	deck (left) limit detection signal
PS35S	manual feed paper detection signal
PS37S	cassette 3 pickup detection signal
PS38S	cassette 3 lifter detection signal
PS39S	cassette 3 paper detection signal

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PS40S	cassette 3 open/closed detection signal
PS41S	vertical path 3 roller paper detection signal
PS42S	cassette 4 pickup detection signal
PS43S	cassette 4 lifter detection signal
PS44S	cassette 4 paper detection signal
PS45S	cassette 4 open/closed detection signal
PS46S	vertical path 4 roller paper detection signal
PS47S	vertical path 1 roller paper detection signal
PS48S	lower right cover open/closed detection signal
PS49S	vertical path 2 roller paper detection signal
PS51S	deck (right) paper level medium detection signal
PS52S	deck (right) paper level upper detection signal
PS54S	deck (left) paper level medium detection signal
PS55S	deck (left) paper level upper detection signal
PS56S	multifeeder cover open/closed detection signal
PS57S	copyboard glass detection signal
PS58S	upper right cover open/closed detection signal
PS59S	toner cartridge cover open/closed detection signal
SHDTC	fixing sub heater power detection signal
SH-ON	fixing sub heater drive signal
SHUT_OFF	main power switch OFF signal
SIZE1	original size detection signal 1
SIZE2	original size detection signal 2
SIZE3	original size detection signal 3
SIZE4	original size detection signal 4
SL1-ON	fixing inlet guide solenoid drive command
SL2-ON	fixing cleaning belt solenoid drive command
SL3-ON	delivery flapper solenoid drive command
SL4-ON	fixing/feeding unit locking solenoid drive command
SL6-ON	multifeeder pickup latch solenoid drive command
SL7-ON	deck (right) pickup solenoid drive command
SL8-ON	deck (left) pickup solenoid drive command
SL9-ON	cassette 3 pickup solenoid drive command
SL10-ON	cassette 4 pickup solenoid drive command
SL11-ON	reversing flapper solenoid drive command
SREGI-A	horizontal registration motor phase-A excitation signal

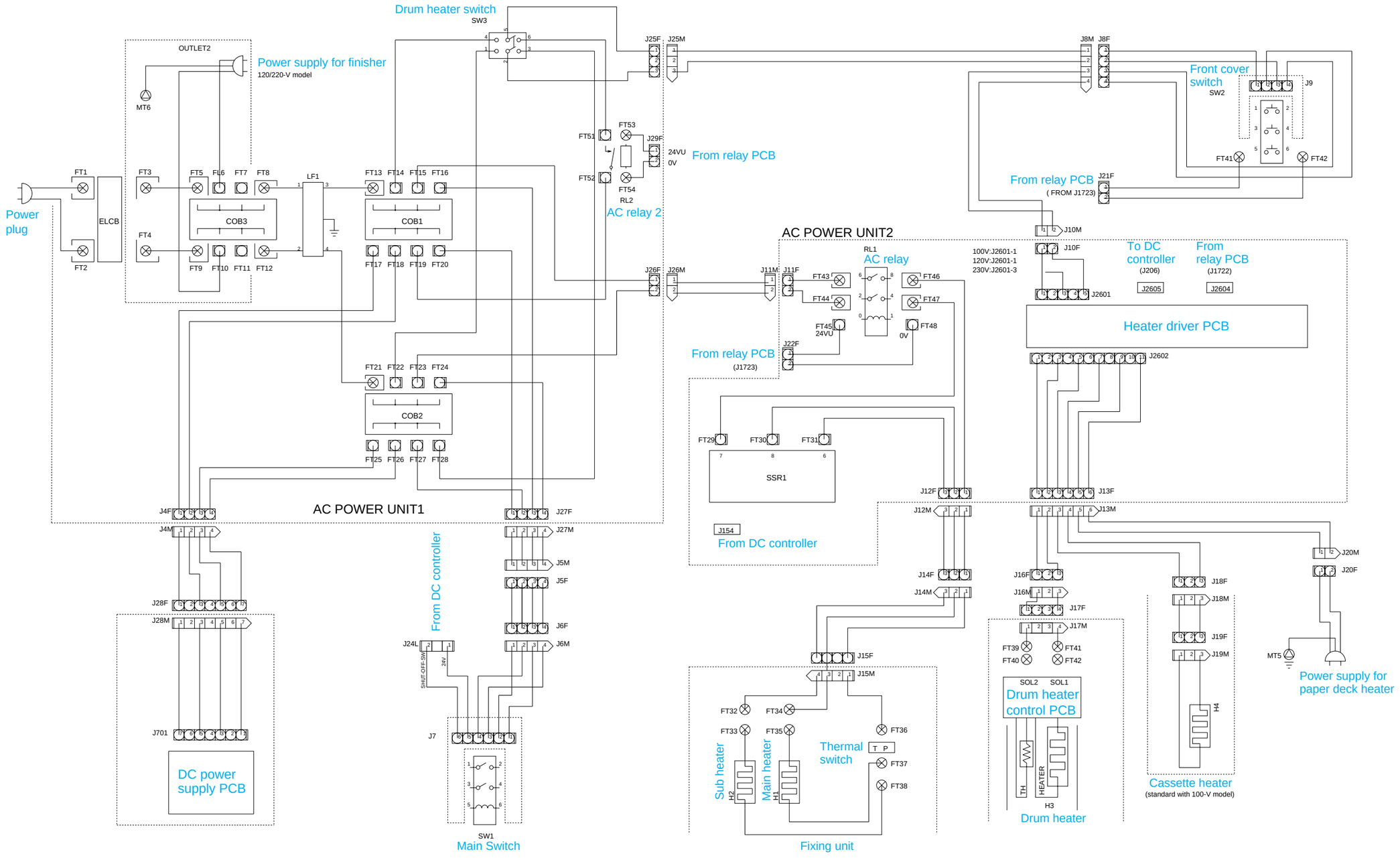
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SREGI-B	horizontal registration motor phase-B excitation signal
SREGI-HOLD	horizontal registration motor position retention signal
S-TEMP	fixing sub thermistor temperature detection signal
SV1-0	cassette 3 paper length detection signal 0
SV1-1	cassette 3 paper length detection signal 1
SV2-0	cassette 4 paper length detection signal 0
SV2-1	cassette 4 paper length detection signal 1
SVR1	multifeeder paper width detection signal
SVR2	cassette 3 paper width detection signal
SVR3	cassette 4 paper width detection signal
TS1S	hopper inside toner detection signal
TS2S	hopper inside toner lower limit detection signal
TS3S	developing assembly inside toner detection signal

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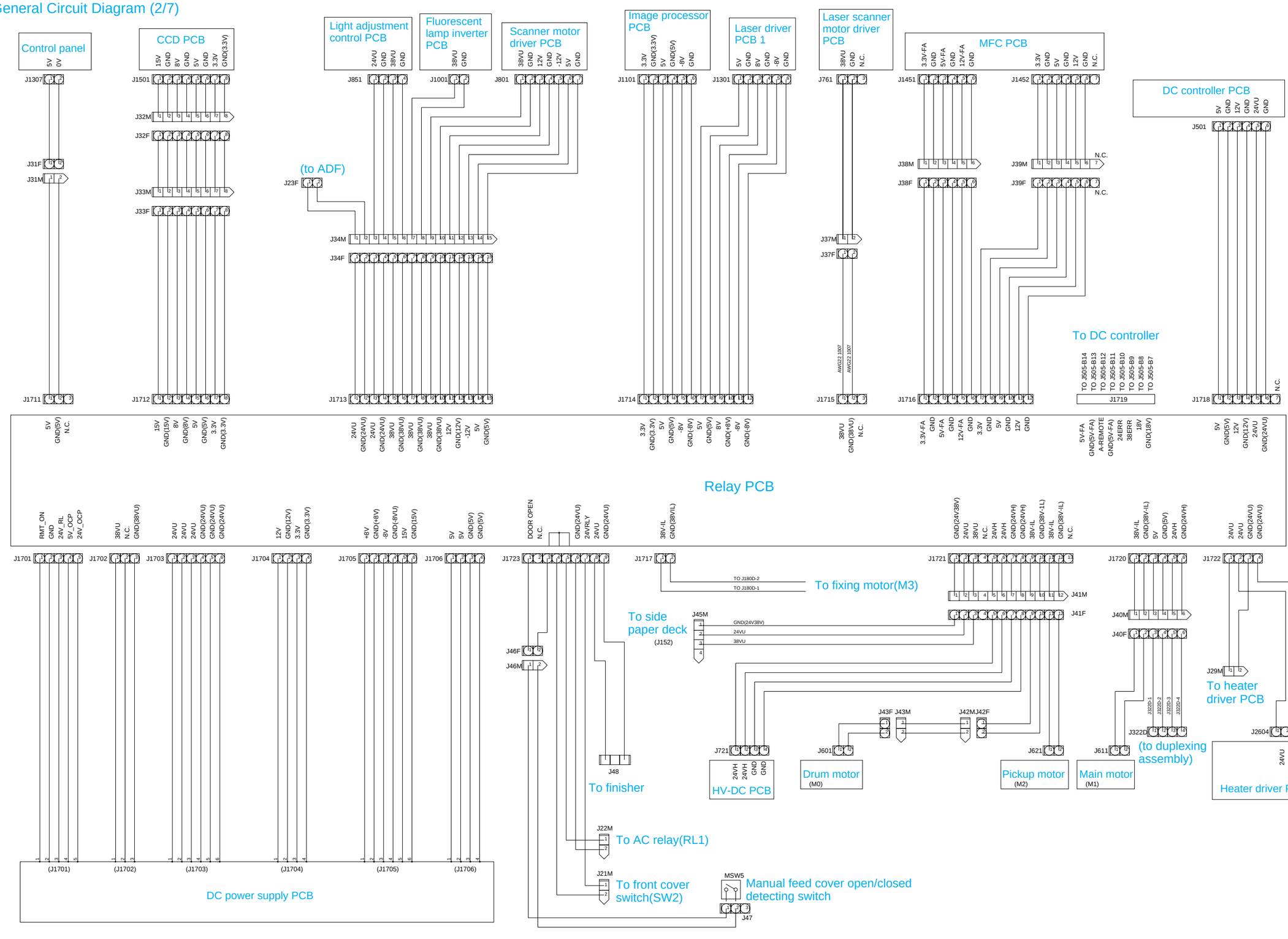
C. GENERAL CIRCUIT DIAGRAM

General Circuit Diagram (1/7)



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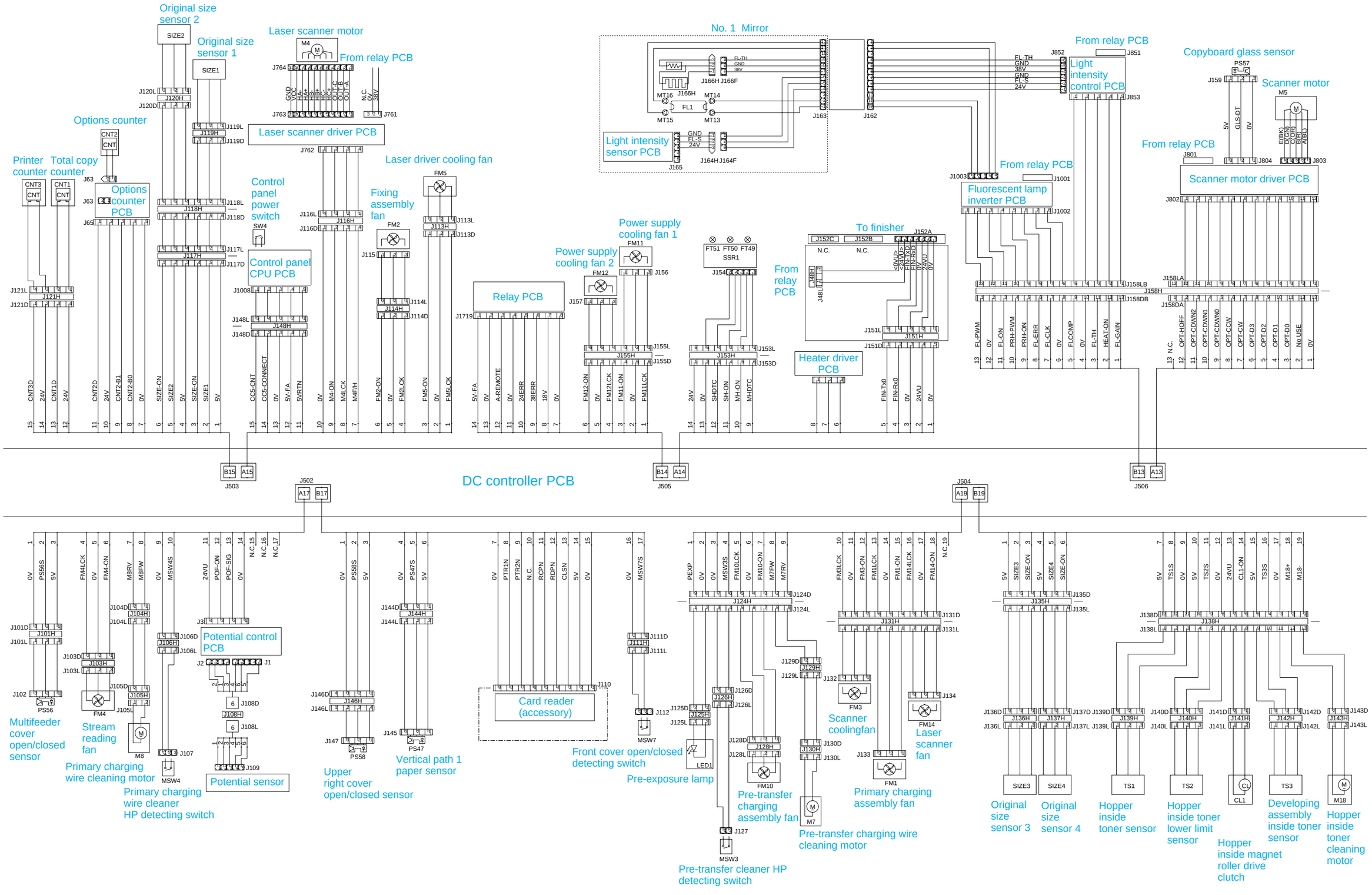
General Circuit Diagram (2/7)



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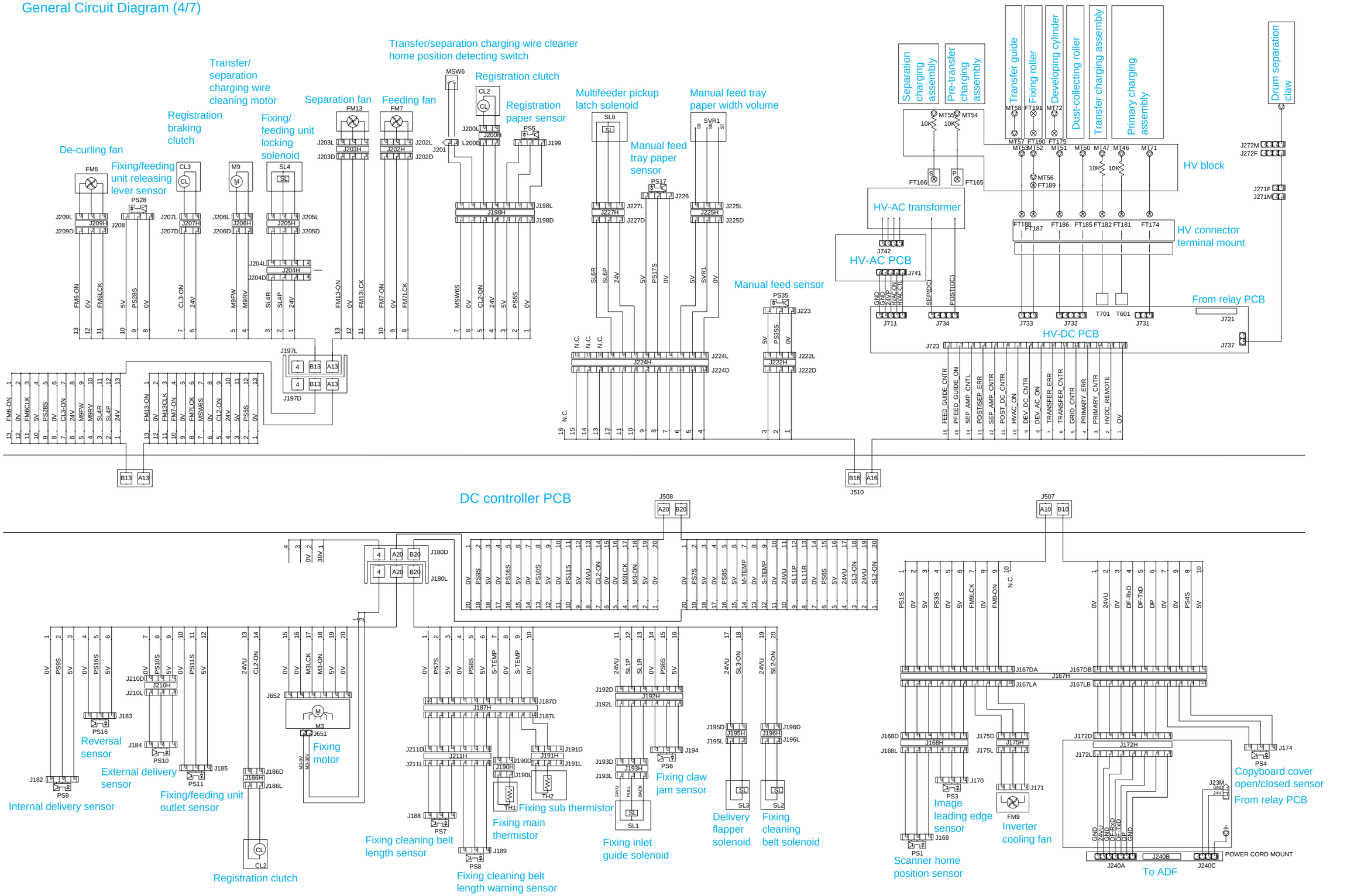
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General Circuit Diagram (3/7)



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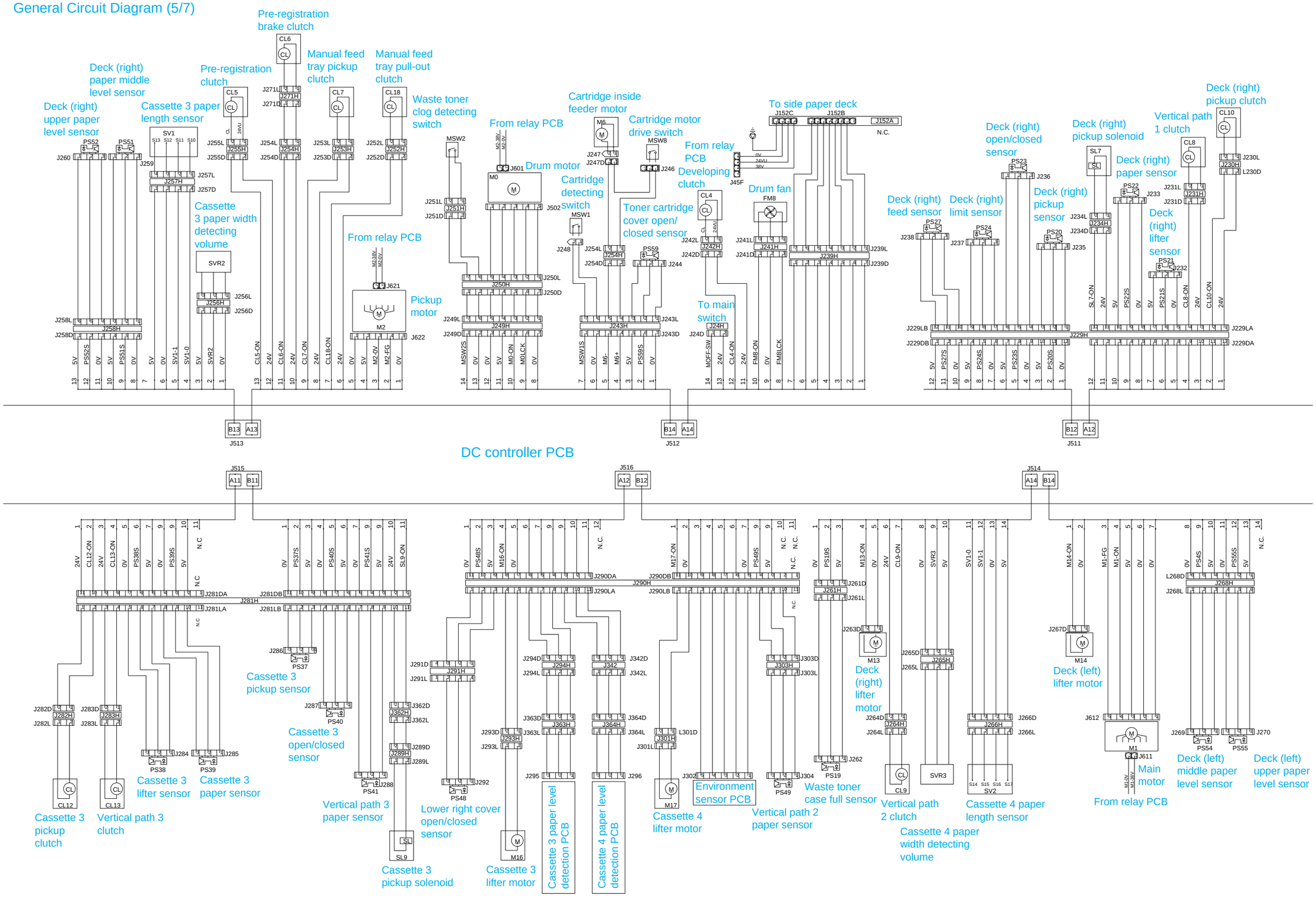
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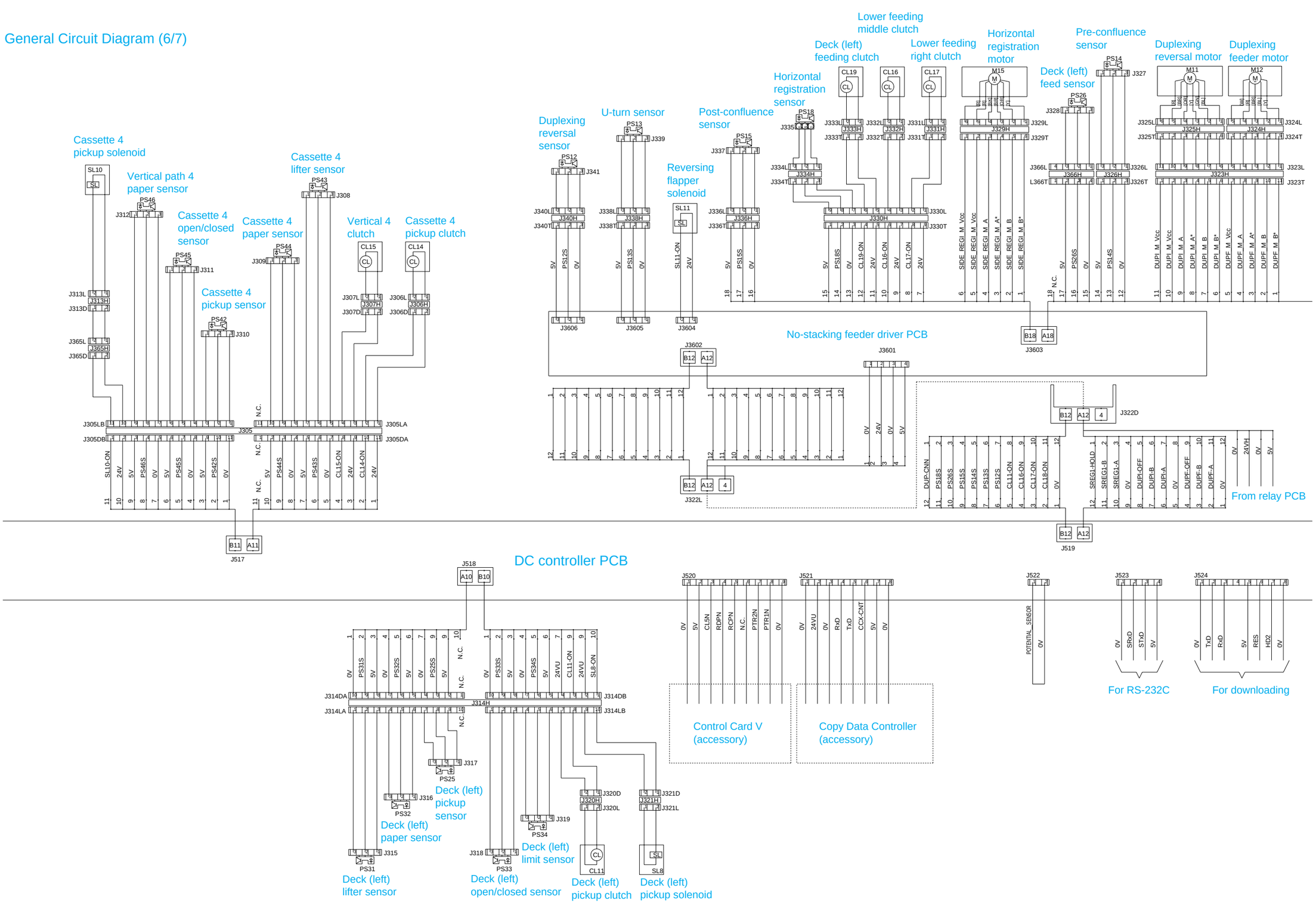
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General Circuit Diagram (5/7)


Deck (right) upper paper level sensor
Deck (right) paper middle level sensor
Cassette 3 paper length sensor
Pre-registration brake clutch
Pre-registration clutch
Manual feed tray pickup clutch
Manual feed tray pull-out clutch
Waste toner clog detecting switch
From relay PCB
Drum motor
Cartridge inside feeder motor
Cartridge motor drive switch
From relay PCB
Developing clutch
To side paper deck
Deck (right) open/closed sensor
Deck (right) pickup solenoid
Deck (right) paper sensor
Vertical path 1 clutch
Deck (right) pickup clutch
Cassette 3 paper width detecting volume
Cartridge detecting switch
Toner cartridge cover open/ closed sensor
Drum fan
Deck (right) feed sensor
Deck (right) limit sensor
Deck (right) pickup sensor
Deck (right) lifter sensor
To main switch
Pickup motor
DC controller PCB
Cassette 3 pickup clutch
Vertical path 3 clutch
Cassette 3 lifter sensor
Cassette 3 paper sensor
Cassette 3 pickup sensor
Cassette 3 open/closed sensor
Vertical path 3 paper sensor
Lower right cover open/closed sensor
Cassette 3 pickup solenoid
Cassette 3 lifter motor
Cassette 3 paper level detection PCB
Cassette 4 paper level detection PCB
Cassette 4 lifter motor
Environment sensor PCB
Vertical path 2 paper sensor
Waste toner case full sensor
Vertical path 2 clutch
Cassette 4 paper width detecting volume
Cassette 4 paper length sensor
Deck (right) lifter motor
Deck (left) lifter motor
Main motor
From relay PCB
Deck (left) middle paper level sensor
Deck (left) upper paper level sensor

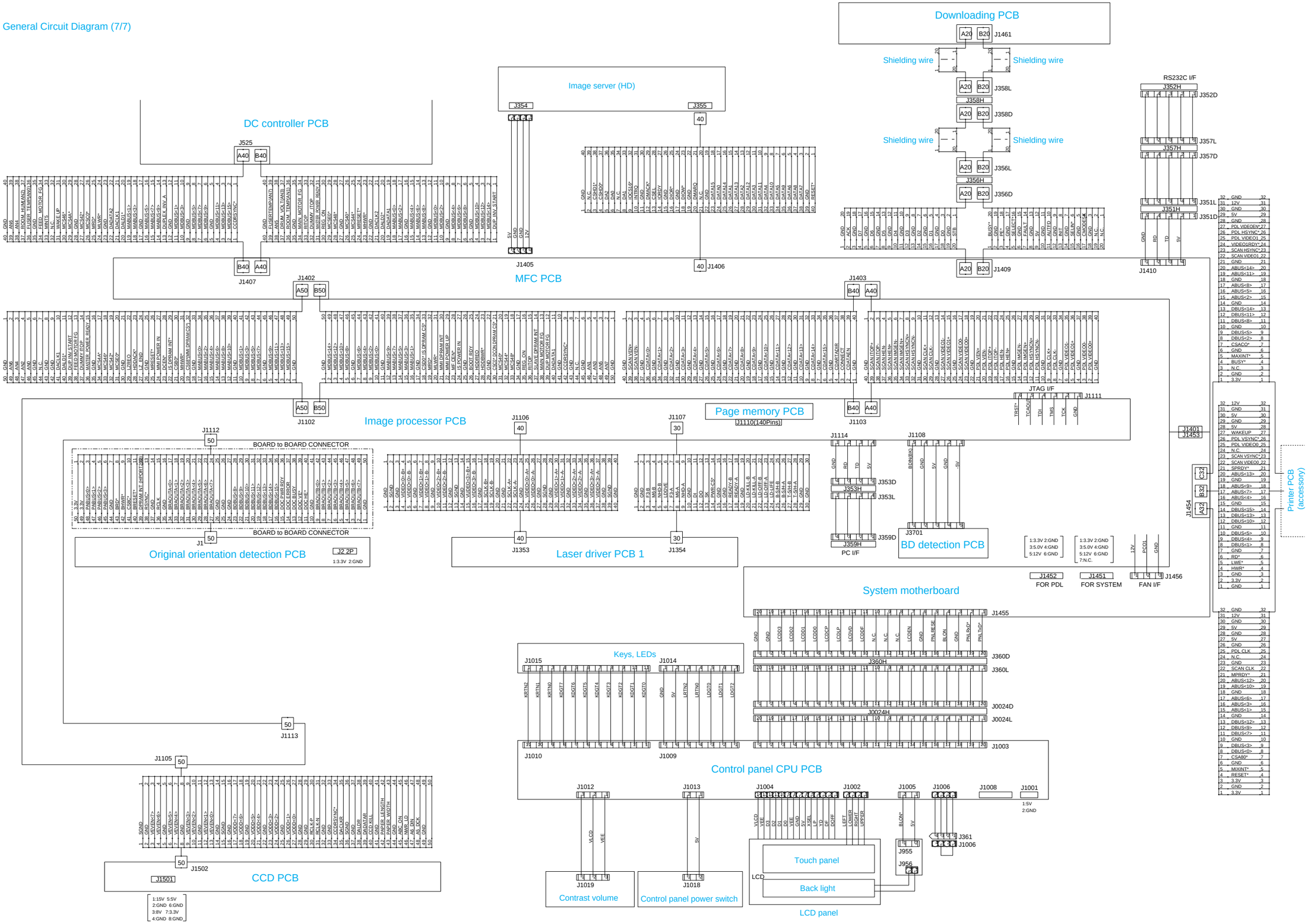
General Circuit Diagram (6/7)



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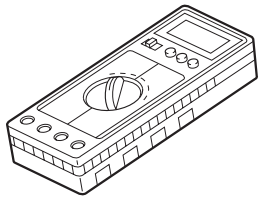
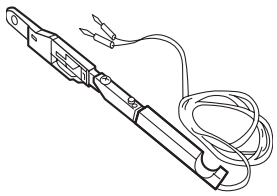
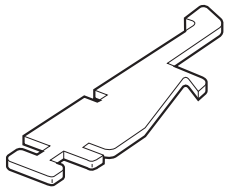
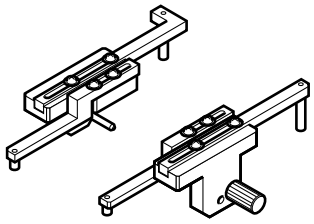
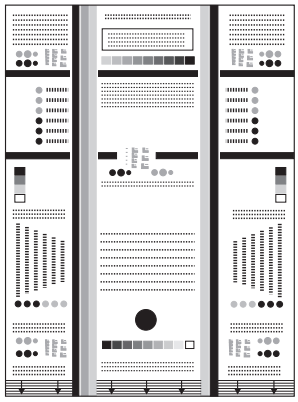
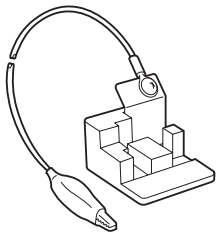
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General Circuit Diagram (7/7)

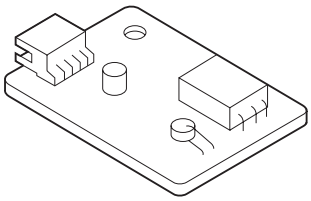
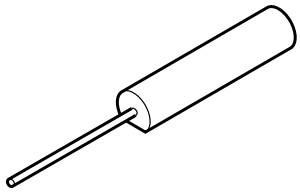
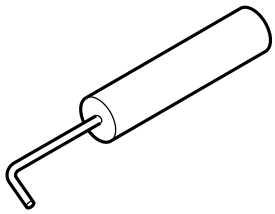


D. SPECIAL TOOLS TABLE

You will need the following tools in addition to the standard tools set to service the copier.

No.	Tool name	Tool No.	Shape	Rank*	Remarks
1	Digital multimeter	FY9-2002		A	For adjusting the laser intensity together with the laser power checker (for electrical checks).
2	Laser power checker	FY9-4013		A	For adjusting the light intensity together with the digital multimeter.
3	Door switch	TKN-0093		A	
4	Mirror positioning tool (front, rear)	FY9-3040		B	For adjusting the distance between No. 1 and No. 2 mirrors.
5	NA-3 test sheet	FY9-9196		A	For adjusting images and making checks.
6	Potential sensor tester electrode	FY9-3041		B	For checking the zero level of the surface potential sensor.

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No.	Tool name	Tool No.	Shape	Rank*	Remarks
7	Environment sensor meter sensor	FY9-3014		B	For checking the environment sensor.
8	Tester extension pin	FY9-3038		A	For making electrical checks (attachment to the meter).
9	Tester extension Pin (L-tipped)	FY9-3039		A	For making electrical checks (attachment to the meter).

*Rank:

A: Each service person is expected to carry one.
B: Each five or so service persons is expected to carry one.
C: Each workshop is expected to carry one.

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E. SOLVENTS/OILS

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning; e.g., glass, plastic, rubber (external covers)	Hydrocarbon of the fluorine family, alcohol, surface activating agent, water	• Do not bring near fire. • Procure locally. • IPA (isopropyl alcohol)
2	Solvent	Cleaning; e.g., metal areas; removing oil or toner.	Hydrocarbon of fluorine family, hydrocarbon of chlorine family, alcohol	• Do not bring near fire. • Procure locally.
3	Heat-resisting grease	Lubricating; e.g., fixing drive parts.	Lithium soap of mineral family, molybdenum disulfide	• CK-0427 (500 g/can)
4	Lubricant		Mineral oil (paraffin family)	• CK-0524 (100 cc)
5	Lubricant	Lubricating; e.g., friction parts.	Silicone oil	• CK-0551 (20 g)
6	Drum cleaning powder	Cleaning; e/g., photosensitive drum.	Selenium oxide	• CK-0429
7	Lubricant	Lubricating; e.g., scanner rail.	Silicone oil	• FY9-6011 (50 cc)
8	Conducting grease	Drum heater contact	Fluorine poly ethyl, Poly tetra fluorine ethylene	• FY9-6008 (10 g)

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